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SUBSONIC AND TRANSONIC PRESSURE DISTRIBUTIONS AROUND A BLUFF AFTERBODY IN THE WAKE OF A 120° CONE FOR VARIOUS SEPARATION DISTANCES

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16. Abstract

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SUMMARY

A wind-tunnel investigation was conducted at free-stream Mach numbers from 0.20 to 1.00 and Reynolds numbers, based on maximum afterbody diameter, from 2.25×10^6 to 6.9×10^6 on solid models of an attached inflatable decelerator (AID) concept. Tests were conducted to obtain static and ram surface pressure distributions about the basic shapes and at various separation distances between the 120° conical forebody and the inflated afterbody shape.

Ram pressure coefficients, approximately equal to stagnation values, were obtained along the front surface of the bluff afterbody shape, with and without the cone, for all Mach numbers tested. However, separation of the cone from the afterbody resulted in a degradation of the ram and static pressure coefficients. Static results obtained with the cone separated various distances from the afterbody indicate that extraction of a payload from a conical forebody by means of an attached inflatable decelerator is possible provided that the mass of the payload plus decelerator is not too great. For Mach numbers of 0.70 or less, the mass of the payload plus decelerator must be less than 3.5 times the mass of the forebody. Additional tests are needed to determine the maximum allowable mass of the payload plus decelerator for Mach numbers greater than 0.70.

INTRODUCTION

One of the uses envisioned for the attached inflatable decelerator (AID) concept discussed in references 1 to 6 and illustrated in figure 1 is on unmanned planetary atmospheric entry systems designed to deliver a scientific payload to the surface of a planet. One such system has the payload and inflatable afterbody packaged behind a large-angle cone forebody in transit to the planet; the cone serves both as a heat shield and as a decelerator on entry. During entry the inflatable afterbody is deployed at supersonic speeds to augment the drag of the cone.

For some missions (such as an unmanned expedition to Mars) it may be desirable to jettison the cone before touchdown. The inflatable afterbody may then be required to

extract the payload from the cone. Mission requirements may dictate that the cone be jettisoned while the decelerator is traveling at either subsonic or supersonic speeds. The investigation of reference 6 was conducted to study the feasibility of separating the cone from the afterbody at a Mach number of 3.0. The present investigation was carried out to evaluate payload separation at subsonic and transonic speeds.

A sting-mounted pressure-distribution model of the AID was tested in the Langley 16-foot transonic tunnel at free-stream Mach numbers from 0.20 to 1.00 and Reynolds numbers, based on maximum afterbody diameter, from 2.25×10^6 to 6.90×10^6. The tests were conducted to obtain ram (total recovery pressure) and surface pressure distribution data on the AID at various separation distances between the cone and afterbody.

SYMBOLS

Physical quantities in this paper are given in the International System of Units (SI). Measurements and calculations were made in U.S. Customary Units.

C_D — pressure drag coefficient, $2\int_0^1 C_{p,f}\left(\frac{r}{r_{ref}}\right) d\left(\frac{r}{r_{ref}}\right) - 2\int_0^1 C_{p,b}\left(\frac{r}{r_{ref}}\right) d\left(\frac{r}{r_{ref}}\right)$

C_p — surface pressure coefficient, $\frac{p_l - p_\infty}{q}$

$C_{p,f}$ — surface pressure coefficient on front surface

$C_{p,b}$ — surface pressure coefficient on back surface

d_c — cone diameter

M — local Mach number

M_∞ — free-stream Mach number

m_a — mass of afterbody

m_c — mass of cone

p_∞ — free-stream static pressure

p_l — local surface pressure

p_r ram pressure (total recovery pressure)

p_t total pressure

q free-stream dynamic pressure

R Reynolds number

r radial coordinate (see fig. 2)

r_b maximum radius of afterbody (see fig. 2)

r_b' maximum radius of burble fence (see fig. 2)

r_c base radius of cone

r_n radius of spherical nose

r_{ref} maximum radius $\left(r_b,\ r_b',\ \text{or}\ r_c\right)$

x_a afterbody axial coordinate (see fig. 2)

x_c cone axial coordinate (see fig. 2)

δ separation distance between cone and afterbody

MODELS, APPARATUS, AND TESTS

Models

A sketch of the pressure-distribution model is shown in figure 2. The forebody was a spherically blunted $\left(\frac{r_n}{r_b} = 0.122\right)$ 120° cone with a sharp shoulder at the cone base rim. The model was constructed so that it could be tested with or without the burble fence and cone forebody. When the forebody was not attached, the sting cavity on the front of the afterbody was filled with a sharp-pointed 135° cone so that its surface faired into the afterbody surface. The cone forebody was constructed of stainless steel with the surface polished to a finish of approximately 250 nm, rms. The afterbody and the burble fence were constructed of cherry wood. The surface was impregnated with epoxy resin

and then polished. The afterbody was constructed without the lobes shown in figure 1. The cone radius was $0.44r_b$, and the maximum radius of the burble fence was $1.10r_b$. Thus, the total projected frontal area including the burble fence was 6.2 times that of the cone frontal area. The leading edge of the burble fence was $0.045r_b$ upstream of the maximum radius of the afterbody. A sting with a diameter of $0.20r_b$ supported the AID model in the tunnel. Three stings with diameters of $0.14d_c$ and with different lengths were used to vary the separation distance between the cone and the AID. Model coordinates are given in table I.

Static- and ram-pressure orifices were installed in the pressure-distribution model at the locations indicated in figure 2 and in tables I and II. Static pressures were measured on the cone at 10 stations along the outer surface and at 7 stations along the inner surface, at 42 stations around the afterbody, and at 11 stations around the burble fence. These static orifices were located in a plane containing the model axis. (See fig. 2.) Ram pressures were measured at five stations along the afterbody at a distance of 0.64 cm above the surface. These orifices were staggered circumferentially to avoid mutual interference.

Test Facility

The present investigation was conducted in the Langley 16-foot transonic tunnel, which is a single-return, continuous-flow wind tunnel, which operates at atmospheric stagnation pressure. The slotted octagonal test section is 4.73 meters across the flats and may be operated continuously at Mach numbers from approximately 0.2 to 1.3. Reference 7 contains a description of the tunnel and its main drive system.

Tests

The AID with the burble fence was tested at cone separation distances of 0.00, 0.11, 0.34, 0.57, 0.91, and 1.36 cone diameters and with the cone removed $\left(\frac{\delta}{d_c} = \infty\right)$. The AID without the burble fence was tested with the cone removed. All tests were conducted with the model oriented at 0° incidence with respect to the flow direction. The Mach number was varied between 0.20 and 1.00. The resulting Reynolds number, based on the maximum afterbody diameter $(2r_b)$, varied between 2.25×10^6 and 6.90×10^6 as indicated by the typical curve shown in figure 3. The model blockage area ratio in the wind tunnel was about 0.013 for the AID and 0.011 for the AID without the burble fence. At such large blockage ratios, the data at $M_\infty = 1.00$ may be subject to substantial wind-tunnel wall interference effects.

The test procedure consisted of slowly increasing the tunnel velocity until the desired test Mach number was reached. After the flow conditions had stabilized, the necessary data were taken and the Mach number was then increased to the next higher value. This procedure was repeated until the maximum Mach number was obtained, and

then a similar procedure was followed while the Mach number was decreased. Data were taken at Mach numbers of 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80, 0.85, 0.90, 0.95, and 1.00 while the Mach number was increasing, and at check Mach numbers of 0.80, 0.60, 0.40, and 0.20 while the Mach number was decreasing. Figure 3 shows that the resulting Reynolds number for a certain Mach number differed, depending on the direction from which the test condition was approached. The variation in Reynolds number results from a change in the temperature of the airstream with time during tunnel operation.

All model pressures were recorded by using three automatic pressure scanner units, each with 48 pressure channels. Each pressure scanner unit was connected to a strain-gage pressure transducer calibrated within $\pm 350\ \mathrm{N/m^2}$. Each scanner unit was operated at a scan rate of two channels per second. The output from the transducers was recorded and reduced to coefficient form at the Langley central digital data recording facility.

RESULTS AND DISCUSSION

Pressure Distributions on AID Shape

A typical surface pressure-coefficient distribution obtained for the attached inflatable decelerator (AID) with the cone attached is shown in figure 4, where the C_p values are represented by scaled arrows perpendicular to the configuration surface. Arrows pointing toward and away from the configuration surface indicate positive and negative values of C_p, respectively. The data indicate the following flow characteristics: The flow expands from the stagnation point at the model nose to a station upstream of the leading edge of the burble fence where the presence of the burble fence forces a recompression of the flow to nearly constant C_p values on both the afterbody and the fence near their juncture. The flow then expands rapidly along the front surface of the fence and separates approximately at the maximum diameter of the fence, where the C_p value becomes constant all along the rear surface of the afterbody.

Surface pressure coefficients obtained for free-stream Mach numbers between 0.20 and 1.00 are shown in figure 5 as a function of the surface coordinate r/r_b for the AID with the cone attached. Local Mach number distributions along the front surface of the configuration are also shown in figure 5 and were calculated by using the free-stream stagnation pressure and the local measured surface pressures. All pressure data obtained in this investigation are given in tables I and II. The data taken after the desired free-stream Mach number was approached from a larger and from a smaller value show generally good agreement. Therefore, in most figures the data presented are those taken when the desired Mach number was approached from a smaller value. However, when significant differences do exist, both sets of data are presented. The pressure-coefficient

distributions shown in figure 5 are similar for all Mach numbers investigated. In general, increasing the Mach number resulted in higher C_p values on the front of the AID upstream of the maximum diameter of the burble fence but had no significant effect on the C_p values on the base of the configuration. The flow separated from the base of the AID at approximately the maximum diameter of the burble fence for all Mach numbers tested and was not sensitive to the direction from which the Mach number was approached.

The local surface Mach number in figure 5 increases as the flow expands along the front surface from near zero at the nose to a maximum at a position slightly upstream of the maximum fence diameter. The maximum local Mach number becomes sonic at a free-stream Mach number of approximately 0.60. The irregular variation of the local Mach number near the fence-afterbody juncture is due to the recompression of flow that takes place as the result of the large change in the surface slope produced by the fence.

Effect of Removal of Burble Fence on Pressure Distributions

The burble fence is discussed in reference 4 as being required at subsonic speeds to maintain uniform flow separation at the configuration base for dynamic stability. Pressure-coefficient distributions were measured with the burble fence and cone removed from the afterbody, and typical results are presented in figure 6, where the C_p values are represented by scaled arrows perpendicular to the configuration surface. Arrows pointing toward and away from the configuration surface indicate positive and negative values of C_p, respectively. The pressure coefficients decrease along the afterbody surface to a minimum value slightly in front of or at the maximum diameter of the model. Slightly downstream of the minimum C_p value there is a sharp rise in the C_p values followed by an approximately constant distribution on the base of the configuration. This behavior is indicative of a separated flow region. Comparison of the C_p distributions obtained for the afterbody shows that considerably more expansion of the flow is obtained about the front surface of the afterbody without the burble fence than with the fence attached.

Pressure-coefficient distributions obtained with the burble fence removed from the afterbody are presented in figure 7 as a function of r/r_b for each free-stream Mach number tested. In general, the C_p distributions show similar variations with r/r_b for all Mach numbers tested. For Mach numbers of 0.50 and above, base flow separation is clearly defined by the pressure distributions and takes place at the maximum diameter of the configuration. The C_p values in the separated flow region increase slightly toward the axis of the configuration. Increasing the Mach number above 0.50 increases the C_p values on the front surface of the AID and gives slightly more uniform C_p values on its base. For Mach numbers of 0.20, 0.30, and 0.40 (figs. 7(a), (b), and (c)), the pressure coefficients in the separated flow region at the base of the configuration are

somewhat variable, and the point at which flow separation occurs on the configuration is downstream of the maximum diameter and is dependent on whether the test Mach number is approached from a smaller (solid curve) or larger (dashed curve) value. This sensitivity of separation-point location to the direction in which the Mach number is approached is attributed to the large radius of curvature near the maximum diameter, which allows the separation point to move relatively large distances, and possibly to flow hysteresis effects. The observed changes in separation-point location could produce dynamic motion if the body were free to translate or pitch. These results are in agreement with unpublished data obtained during the investigation of reference 5 on a fabric model where it was found that for Mach numbers less than 0.50, violent oscillations of the AID occurred if a burble fence was not attached to the afterbody.

Pressure Distributions for Separation of Cone and Afterbody

Static pressure.- Surface pressure-coefficient distributions obtained for the AID with the cone separated from the afterbody by 0.11, 0.34, 0.57, 0.91, and 1.36 cone diameters and with the cone removed are presented in figure 8. Curves faired through the measured pressure data are for representative Mach numbers throughout the range investigated. For small separation distances, pressure coefficients obtained on the base of the cone were constant and were identical with those obtained on the front of the afterbody. (See, for example, figs. 8(a) and 8(b).) This result indicates that a cone-wake separated flow region extends between the two bodies. The flow reattaches to the afterbody at the point where the pressure coefficient curves peak slightly downstream from the constant-pressure region. Thus, the wake separated flow region is shaped like a cone frustum since the region covers a larger area on the afterbody than on the cone base. This behavior is similar to that shown in figure 4(b) of reference 6. Increasing the distance between the cone and the afterbody results in the wake separated flow region covering a larger area of the afterbody surface, greater expansion of the flow about the cone surface, and C_p values on the front surface of the afterbody even lower than those obtained on the base of the cone. Base flow separation occurs at the maximum diameter of the fence for all configurations and flow conditions investigated.

For small distances between the cone and the AID, increasing the Mach number increases the pressure coefficients along the front surface of both bodies and has little effect on the extent of the wake separated flow region and base-pressure coefficients. For greater distances between the cone and the AID, increasing the Mach number results in the wake separated flow region covering a greater area of the afterbody.

For $\frac{\delta}{d_c} = 1.36$ (fig. 8(e)), the pressure coefficients on the base of the cone and on most of the front surface of the afterbody for $M_\infty = 0.30$ are considerably more irregular than for the other separation distances and Mach numbers presented. This irregular

behavior indicates that the separated flow region is in the process of changing from a cone-frustum shape to a more converged shape. A similar change in the shape of the separated flow region was obtained for the same configuration at a Mach number of 3.0 in reference 6 but at a much larger cone-afterbody separation distance.

The pressure distributions obtained for the cone removed from the AID (fig. 8(f)) are similar to those obtained with the cone attached to the afterbody (fig. 5) and show similar variations with Mach number. However, for $0 \leqq r/r_b \leqq 0.50$, the pressure coefficients are slightly higher and less irregular than those obtained with the cone attached.

Ram pressures.- The ratios of ram pressure to total pressure are shown in figure 9 as a function of r/r_b for each separation distance and representative free-stream Mach number tested. For the cone attached to the afterbody (fig. 9(a)), ram pressures along the front surface of the afterbody are approximately constant and equal to the stagnation pressure for all Mach numbers tested. For $\frac{\delta}{d_c} = 0.11$ (fig. 9(b)), the ram pressures at small values of r/r_b are less than stagnation pressures because the orifices are located within the cone-wake separated flow region, whereas at large values of r/r_b, stagnation pressures are obtained. Increasing the free-stream Mach number reduces the ram pressures for those locations where the probes are embedded in the separated flow region. This behavior is due to the separated flow region covering a larger area of the afterbody, and thus, the probes are embedded deeper in the separated flow region as the free-stream Mach number is increased. As δ/d_c is increased to 0.34 (fig. 9(c)), the separated flow region covers a larger area of the afterbody, and thus, ram pressures equal to stagnation pressures are obtained over a smaller area of the afterbody. For $0.57 \leqq \frac{\delta}{d_c} \leqq 1.36$ (figs. 9(d), (e), and (f)), all the ram pressures are affected by the cone wake and are lower than the free-stream stagnation values. However, for the cone removed (fig. 9(g)), ram pressures equal to stagnation pressures were again obtained along the front surface of the afterbody as expected.

AID Pressure Drag Coefficients

Drag coefficients obtained by integration of the C_p distributions obtained for the AID with the cone attached (fig. 5), the AID (fig. 8), and the AID without the fence attached (fig. 7) are shown as a function of Mach number in figure 10. Also shown for comparison are force test data obtained from reference 5 on a flexible AID model of similar shape. Drag coefficients for the AID with the cone attached (circle symbols) and for the AID (diamond symbols) show relatively smooth increases with increasing Mach numbers, whereas the drag coefficients for the AID without the fence (square symbols) show similar but much more erratic variations. For the AID with the cone attached, the drag coefficients show an increase with Mach number from a value of 0.50 at $M_\infty = 0.20$ to a value of 0.90 at $M_\infty = 1.00$. The data from reference 5 show much higher drag coefficients at

the lower Mach numbers and a slightly higher value at $M_\infty = 1.00$ than the present AID data. The discrepancy between the two sets of data is thought to be due to the difference in the actual configuration shapes tested. The configuration tested in reference 5 was designed to have the same shape as the configuration of the present investigation at supersonic Mach number; however, the AID of reference 5 was constructed of lightweight fabric and was inflated by four ram-air inlets mounted on the AID canopy. Since the shape is dependent on the pressure distribution, the subsonic air loads on the flexible model resulted in an actual configuration shape that was somewhat blunter than the design shape of the present investigation.

Pressure Drag Performance in Cone Wake

Drag coefficients obtained by integration of the pressure distributions about the cone and the afterbody are presented in figure 11 for each cone-afterbody separation distance and Mach number investigated. In general, the cone drag coefficients first increase in value and then become constant as the cone-afterbody separation distance increases, whereas the afterbody drag coefficients first decrease to a minimum value and then start increasing again. For free-stream Mach numbers greater than 0.80, a minimum value was not obtained within the range of separation distances investigated. However, since higher drag coefficients are obtained with the cone removed $\left(\frac{\delta}{d_c} = \infty\right)$ than at $\frac{\delta}{d_c} = 1.36$, it is evident that the drag coefficients do follow the same trend for all Mach numbers tested. Increasing the free-stream Mach number also results in an increase in the drag coefficients for both the cone and the afterbody. For a free-stream Mach number of 0.20 (fig. 9(a)) and $\frac{\delta}{d_c} = 1.36$, the drag coefficients obtained when the Mach number was approached from a larger value (solid symbols) are considerably different from those obtained when the Mach number was approached from a smaller value (open symbols). This difference is reflected in the pressure-coefficient distributions by lower C_p values on the base of the cone and on much of the front surface of the afterbody when the test Mach number was approached from a larger value than when it was approached from a smaller value. These differences in pressure are due to changes in the separated flow region between the cone and the afterbody as the result of the small difference in Reynolds number or flow hysteresis effects. The separated flow region between the cone and the afterbody may be in the process of changing from a diverged shape to a more converged shape, and thus, small flow changes have a significant effect on the shape of the separated flow region and the pressure coefficients in that region.

Payload Extraction From Cone

Since it may be desirable to jettison the cone before landing, it is of interest to determine the maximum payload mass which may be separated from the cone by the AID

at subsonic speeds. This has been done by using the pressure drag coefficients of figure 11 and an AID-to-cone frontal-area ratio of 6.2 to compute values of afterbody-to-cone mass ratios for which the two bodies will have the same acceleration and, thus, will not separate any farther (from purely static considerations). The loci of points defining the maximum static separation distance of the two bodies is presented in figure 12, in which the ratio of the mass of the AID plus payload to mass of the cone is plotted against separation distance. The region below the curves indicates conditions under which the cone and afterbody will continue to separate. Curves are presented for free-stream Mach numbers representative of those tested and indicate that for Mach numbers of 0.70 or less the two bodies will continue to separate if the ratio of the mass of the AID plus payload to the mass of the cone is less than approximately 3.5. For Mach numbers greater than 0.70, the separation boundaries did not reach a minimum for the range of separation distances investigated, and additional tests are needed to determine the maximum allowable mass of the AID plus payload. For comparison purposes, the mass ratio in the Viking program is approximately 5, and from these data obtained at steady-state conditions, separation of the Viking payload and cone with this AID configuration may not occur at subsonic speeds. It should be noted, however, that the curves of figure 12 would represent a lower bound since separation dynamics and skin-friction drag have not been considered. Also, increases in AID-to-cone area ratio result in direct increases in mass ratio allowable for separation.

CONCLUSIONS

A wind-tunnel investigation was conducted at free-stream Mach numbers from 0.20 to 1.00 and Reynolds numbers, based on maximum afterbody diameter, from 2.25×10^6 to 6.90×10^6 on solid models of an attached inflatable decelerator (AID) concept. Tests were conducted to obtain static and ram surface pressure distributions about the basic shapes and at various separation distances between the 120° conical forebody and the AID. The results indicate the following conclusions:

1. For the AID with the cone attached, the local Mach number becomes sonic at a point on the body for a free-stream Mach number of approximately 0.60.

2. Drag coefficients for the AID with the cone attached show a smooth increase with increase in Mach number from a value of 0.50 at a free-stream Mach number of 0.20 to a value of 0.90 at a free-stream Mach number of 1.00.

3. Ram pressure coefficients were approximately equal to stagnation values along the front surface of the AID, with and without the cone attached, for all Mach numbers tested.

4. For the conical forebody separated from the afterbody, ram and static pressure coefficients on the forward part of the afterbody are reduced considerably from those obtained at zero separation distance. Thus, the pressure drag coefficients for the cone and the afterbody increased and decreased, respectively, as the two bodies were separated.

5. The results based on integrated pressure drag indicate that extraction of a payload from a conical forebody by means of an attached inflatable decelerator is possible provided that the mass of the payload plus decelerator is not too great. For Mach numbers of 0.70 or less, the mass of the payload plus decelerator must be less than 3.5 times the mass of the forebody. Additional tests are needed to determine the maximum allowable mass of the payload plus decelerator for Mach numbers greater than 0.70.

6. For Mach numbers less than 0.50, adding the burble fence to the afterbody causes the flow separation point to be well defined and located at the maximum diameter of the fence, whereas for Mach numbers of 0.50 and above, flow separation occurs at the maximum diameter of the configuration with or without the fence attached.

Langley Research Center,
National Aeronautics and Space Administration,
Hampton, Va., October 12, 1971.

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TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS

(a) $M_\infty = 0.20$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
1[a]	0.000	0.000	1.0168	1.0209	1.0087	1.0121	1.0093	1.0132		
2	.011	.050	.9839	.9692	.9749	.9640	.9588	.9634		
3	.039	.100	.9485	.9389	.9420	.9247	.9287	.9118		
4	.068	.150	.9246	.9143	.9220	.9308	.9254	.8613		
5	.097	.200	.8904	.8729	.8744	.8350	.8366	.8126		
6	.125	.250	.8581	.8422	.8050	.7813	.7703	.7564		
7	.154	.300	.8249	.7234	.6641	.7178	.7042	.6845		
8	.183	.350	.7931	.9326	.8583	.6318	.6085	.5919		
9	.212	.400	.7409	.6377	.5342	.4824	.4500	.4023		
10	.232	.435	.6472	.4644	.2676	.1664	.0897	-.0022		
11	.240	.435	.6448	.4611	.2377	.1033	.0534	.0606		
12	.223	.400	.6405	.4578	.2414	.1066	.0468	.0800		
13	.199	.350	.6491	.4739	.2324	.1170	.0391	.0857		
14	.174	.300	.6405	.4611	.2377	.1236	.0589	.0569		
15	.150	.250	.6491	.4626	.3257	.1269	.0632	.0503		
16	.126	.200	.6415	.7895	.6384	.1365	.0622	.0701		
17	.102	.150	.6339	.4574	.2490	.1308	.0684	.0658		
18[b]	.007	.150	.6392	.4700	.2347	.1084	.0041	-.0521	.9483	.9398
19	.026	.201	.6458	.4584	.2383	.1038	-.0154	-.0704	.9307	.9152
20	.046	.250	.6403	.4611	.2347	.1046	-.0178	-.1034	.9004	.8825
21	.066	.301	.6497	.4666	.2254	.0884	-.0300	-.1046	.8663	.8443
22	.087	.350	.6392	.4676	.2282	.0862	-.0358	-.0790	.8282	.7938
23	.109	.401	.6435	.4678	.2260	.0792	-.0737	-.1248	.7760	.7291
24	.124	.434	.6404	.4553	.2186	.0635	-.0859	-.1022	.7306	.7007
25	.136	.460	.6486	.4339	.2106	.0639	.1042	-.0777	.6999	.6676
26	.156	.500	.7482	.4286	.2032	.0455	.0697	.0922	.6747	.6164
27	.187	.563	.6029	.5566	.1909	.0543	-.0487	.3049	.5740	.4971
28	.220	.623	.4720	.6640	.2340	.0451	-.0152	.4089	.4598	.3391
29	.251	.676	.3449	.4707	.4991	.1463	.0580	.5867	.3376	.1933
30	.285	.725	.2613	.3332	.5855	.3401	.2267	.7169	.2406	.0557
31	.320	.772	.0745	.1271	.4310	.4720	.3954	.6478	.0527	-.1875
32	.357	.815	-.0982	-.0549	.1700	.3953	.5055	.5867	-.1121	-.4648
33	.398	.857	-.2069	-.1831	-.0110	.2046	.4067	.4400	-.2415	-.5959
34	.443	.895	-.3679	-.3396	-.2199	-.0304	.2059	.2401	-.4085	-.9996
35	.502	.934	-.4693	-.4519	-.3803	-.2607	-.0676	.0017	-.5178	-1.3920
36	.580	.970	-.2703	-.2871	-.2568	-.2169	-.1255	-.0643	-.3962	-1.7031
37	.624	.984	.0339	-.0018	-.0208	-.0058	.0275	.0659	-.0415	-1.8021
38	.693	.997	.1937	.1881	.2406	.2741	.3240	.4186	.4233	-1.9245
39	.767	1.000								-1.8822
40	.822	.991								-1.8251
41	.874	.972	-.3268	-.3362	-.3224	-.3366	-.3162	-.3021	-.3348	-1.2029
42	.933	.934	-.3956	-.3519	-.3473	-.1600	-.3375	-.3021	-.3320	-.6497
43	.973	.895	-.3532	-.3507	-.3594	-.3581	-.3244	-.3223	-.3327	-.6285
44	.999	.856	-.3636	-.3549	-.3508	-.3442	-.3396	-.3180	-.3493	-.6361
45	1.035	.772	-.3624	-.3548	-.3508	-.3511	-.3528	-.3223	-.3443	-.4929
46	1.047	.675	-.3532	-.3645	-.3471	-.3531	-.3497	-.3143	-.3462	-.4390
47	1.027	.565	-.3471	-.3360	-.3354	-.3484	-.3387	-.3277	-.3505	-.4316
48	.955	.425	-.3834	-.3452	-.3555	-.3512	-.3427	-.3323	-.3528	-.4377
49	.821	.300	-.3518	-.3351	-.3363	-.3122	-.3190	-.3106	-.3239	-.3782
50	.694	.225	-.3447	-.3168	-.3336	-.2927	-.3001	-.2849	-.3048	-.3238
51	.018	.175	.6324	.4587	.2106	.0901	-.0026	-.0718	.9334	.9239
52	.037	.225	.6313	.4568	.2259	.0909	-.0146	-.0986	.9041	.8883
53	.057	.275	.6324	.4692	.2329	.0870	-.0436	-.1607	.8729	.8445
54	.078	.326	.6293	.4568	.2286	.0866	-.0436	-.1937	.8207	.8062
55	.100	.376	.6313	.4536	.2235	.0745	-.0622	-.2061	.7833	.7475
56	.122	.426	.6356	.4575	.2224	.0714	-.0521	-.2042	.7491	.6954
57	.222	.627	.4693	.6313	.2005	.0617	-.0866	-.2058	.4463	.3206
58	.323	.775	.0646	.1232	.4038	.4515	.0962	-.1028	.0399	-.2624
59	.505	.937	-.5048	-.4327	-.3965	-.2720	-.0432	-.1708	-.5365	-1.6064
60[c]	.727	1.012	.1844	.2074	.2990	.3629	.4274	.5218	.4806	
61	.733	1.032	.2843	.2978	.3107	.3278	.3040	.3622	.2825	
62	.741	1.050	-.0373	-.1048	-.1932	-.2264	-.2407	-.2267	-.3689	
63	.758	1.073	-1.1924	-1.2578	-1.3559	-1.3584	-1.3033	-1.3200	-1.5805	
64	.778	1.087	-1.4839	-1.6093	-1.7261	-1.7383	-1.7242	-1.7361	-1.9404	
65	.799	1.095	-1.0031	-1.3202	-1.5752	-1.7046	-1.7528	-1.8095	-1.7532	
66	.833	1.099	-.4142	-.4353	-.4591	-.5087	-.6123	-.6046	-.4969	
67	.864	1.090	-.3619	-.3561	-.3742	-.3761	-.3491	-.3304	-.3598	
68	.888	1.070	-.3631	-.3479	-.3469	-.3434	-.3357	-.3075	-.3454	
69	.900	1.030	-.3495	-.3292	-.3281	-.3286	-.3426	-.3055	-.3341	
70	.890	1.000	-.3401	-.3358	-.3336	-.3305	-.3364	-.2942	-.3329	

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(b) $M_\infty = 0.30$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
[a]1	0.000	0.000	1.0274	1.0208	1.0177	1.0164	1.0222	1.0200		
2	.011	.050	.9944	.9858	.9802	.9758	.9731	.9620		
3	.039	.100	.9618	.9511	.9648	.9297	.9328	.9216		
4	.068	.150	.9338	.9170	.9595	.9737	.9105	.8731		
5	.097	.200	.9027	.8806	.8569	.8428	.8361	.8218		
6	.125	.250	.8678	.8426	.8151	.7920	.7854	.7692		
7	.154	.300	.8392	.8808	.8566	.7270	.7149	.7022		
8	.183	.350	.8016	.8370	.7913	.6472	.6252	.6052		
9	.212	.400	.7510	.6513	.5530	.4962	.4569	.4237		
10	.232	.435	.6545	.4779	.2768	.1663	.0963	.0259		
11	.240	.435	.6556	.4733	.2449	.1064	.0418	.0046		
12	.223	.400	.6605	.4753	.2508	.1203	.0476	.0495		
13	.199	.350	.6623	.4772	.2453	.1263	.0656	.0439		
14	.174	.300	.6568	.4753	.2496	.1292	.0706	.0202		
15	.150	.250	.6610	.4745	.3101	.1405	.0715	.0345		
16	.126	.200	.6580	.6748	.4771	.1492	.0725	.0501		
17	.102	.150	.6500	.4746	.2523	.1424	.0715	.0733		
[b]18	.007	.150	.6496	.4703	.2347	.1108	.0001	-.0451	.9566	.9534
19	.026	.201	.6553	.4706	.2423	.1082	-.0161	-.0750	.9406	.9261
20	.046	.250	.6556	.4706	.2467	.1063	-.0249	-.0981	.9081	.8889
21	.066	.301	.6580	.4736	.2463	.0939	-.0460	-.1149	.8712	.8438
22	.087	.350	.6541	.4721	.2424	.0927	-.0518	-.0921	.8306	.8029
23	.109	.401	.6511	.4717	.2349	.0835	-.0660	-.1238	.7650	.7378
24	.124	.434	.6525	.4625	.2181	.0675	-.0755	-.1480	.7480	.6982
25	.136	.460	.6750	.4555	.2165	.0581	-.0799	-.1018	.7229	.6664
26	.156	.500	.7596	.4444	.2109	.0622	-.0775	-.0414	.6809	.6134
27	.187	.563	.6147	.5571	.2025	.0629	-.0607	.1124	.5843	.4949
28	.220	.623	.4817	.6756	.2334	.0561	-.0439	.1390	.4705	.3434
29	.251	.676	.3553	.4781	.4734	.1642	.0609	.4146	.3484	.1853
30	.285	.725	.2748	.3378	.5802	.4193	.3141	.5492	.2465	.0455
31	.320	.772	.0852	.1364	.4397	.4999	.4919	.5121	.0730	-.2046
32	.357	.815	-.0891	-.0540	.1960	.4256	.5140	.5446	-.1076	-.4766
33	.398	.857	-.1839	-.1633	.0049	.2375	.4127	.4401	-.2346	-.7053
34	.443	.895	-.3435	-.3286	-.2056	-.0116	.2021	.2390	-.3963	-1.0312
35	.502	.934	-.4435	-.4446	-.3655	-.2306	-.0659	.0140	-.5207	-1.4365
36	.580	.970	-.2389	-.2529	-.2448	-.1837	-.1079	-.0515	-.3870	-1.7636
37	.624	.984	.0585	.0496	.0161	.0184	.0385	.0901	-.0215	-1.8687
38	.693	.997	.1766	.1909	.2402	.2861	.3321	.4193	.4452	-1.9801
39	.767	1.000								-1.9413
40	.822	.991								-1.9621
41	.874	.972	-.3350	-.3242	-.3273	-.3186	-.3112	-.3003	-.3261	-1.0885
42	.933	.934	-.2970	-.3303	-.3446	-.3343	-.3376	-.3036	-.3526	-.5743
43	.973	.895	-.3423	-.3465	-.3499	-.3459	-.3395	-.3196	-.3615	-.5936
44	.999	.856	-.3502	-.3526	-.3597	-.3353	-.3456	-.3312	-.3633	-.6288
45	1.035	.772	-.3564	-.3619	-.3611	-.3424	-.3541	-.3299	-.3585	-.5975
46	1.047	.675	-.3680	-.3568	-.3597	-.3372	-.3450	-.3276	-.3553	-.5021
47	1.027	.565	-.3515	-.3557	-.3418	-.3425	-.3402	-.3168	-.3606	-.4811
48	.955	.425	-.3389	-.3467	-.3638	-.3460	-.3354	-.3302	-.3589	-.4708
49	.821	.300	-.3203	-.3253	-.3276	-.3218	-.3091	-.3108	-.3279	-.4108
50	.694	.225	-.3157	-.3069	-.3047	-.3124	-.2925	-.2887	-.3171	-.3635
51	.018	.175	.6504	.4745	.2461	.1056	-.0109	-.0923	.9439	.9344
52	.037	.225	.6522	.4757	.2451	.1044	-.0225	-.1142	.9215	.9055
53	.057	.275	.6492	.4782	.2488	.1007	-.0243	-.1441	.8889	.8676
54	.078	.326	.6548	.4745	.2447	.0917	-.0367	-.1544	.8443	.8245
55	.100	.376	.6536	.4745	.2431	.0878	-.0497	-.1886	.8045	.7739
56	.122	.426	.6531	.4745	.2417	.0791	-.0586	-.1926	.7590	.7157
57	.222	.627	.4832	.6585	.2089	.0628	-.0756	-.1517	.4632	.3473
58	.323	.775	.0674	.1327	.4212	.4256	.1733	.1244	.0530	-.2106
59	.505	.937	-.4934	-.4762	-.3822	-.2423	-.0232	-.1023	-.5318	-1.4412
[c]60	.727	1.012	.1827	.2082	.2873	.3673	.4439	.5115	.4859	
61	.733	1.032	.2950	.3228	.3414	.3546	.3509	.4107	.3197	
62	.741	1.050	.0351	-.0142	-.1218	-.1624	-.1913	-.1743	-.3011	
63	.758	1.073	-1.1248	-1.1660	-1.2704	-1.2802	-1.2836	-1.2913	-1.4630	
64	.778	1.087	-1.3994	-1.4518	-1.6017	-1.6428	-1.6564	-1.6793	-1.6897	
65	.799	1.095	-.7511	-.9032	-1.3011	-1.5120	-1.6216	-1.7069	-1.0323	
66	.833	1.099	-.3938	-.4034	-.4553	-.4698	-.5092	-.5033	-.5286	
67	.864	1.090	-.3560	-.3604	-.3667	-.3597	-.3533	-.3344	-.4125	
68	.888	1.070	-.3472	-.3467	-.3524	-.3236	-.3337	-.3163	-.3702	
69	.900	1.030	-.3435	-.3420	-.3424	-.3237	-.3297	-.3108	-.3427	
70	.890	1.000	-.3452	-.3326	-.3353	-.3198	-.3261	-.3156	-.3414	

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(c) $M_{\infty} = 0.40$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p: Afterbody with fence and cone forebody for δ/d_c – 0.00	0.11	0.34	0.57	0.91	1.36	∞	Afterbody without fence
[a]1	0.000	0.000	1.0401	1.0417	1.0403	1.0353	1.0401	1.0379		
2	.011	.050	1.0093	1.0032	.9973	.9914	.9884	.9858		
3	.039	.100	.9772	.9679	.9745	.9476	.9456	.9419		
4	.068	.150	.9486	.9354	.9388	.9240	.9156	.8928		
5	.097	.200	.9203	.9000	.8783	.8603	.8544	.8434		
6	.125	.250	.8877	.8592	.8285	.8103	.7972	.7833		
7	.154	.300	.8553	.9196	.8848	.7438	.7328	.7141		
8	.183	.350	.8222	.8235	.7658	.6632	.6414	.6170		
9	.212	.400	.7649	.6676	.5640	.5063	.4686	.4383		
10	.232	.435	.6666	.4907	.2842	.1701	.0942	.0262		
11	.240	.435	.6720	.4931	.2588	.1253	.0367	.0294		
12	.223	.400	.6756	.4936	.2595	.1322	.0497	.0175		
13	.199	.350	.6749	.4941	.2613	.1334	.0580	.0275		
14	.174	.300	.6767	.4920	.2621	.1458	.0656	.0354		
15	.150	.250	.6756	.4900	.2804	.1483	.0717	.0330		
16	.126	.200	.6734	.6259	.4063	.1537	.0704	.0315		
17	.102	.150	.6693	.4865	.2661	.1485	.0707	.0134		
[b]18	.007	.150	.6623	.4911	.2561	.1270	.0091	-.0625	.9732	.9728
19	.026	.201	.6717	.4902	.2553	.1237	-.0076	-.0854	.9547	.9434
20	.046	.250	.6723	.4907	.2542	.1164	-.0247	-.1057	.9255	.9071
21	.066	.301	.6696	.4908	.2505	.1094	-.0417	-.1239	.8908	.8734
22	.087	.350	.6724	.4890	.2475	.1045	-.0441	-.1075	.8537	.8234
23	.109	.401	.6685	.4837	.2378	.0924	-.0622	-.1366	.7593	.7590
24	.124	.434	.6634	.4800	.2302	.0811	-.0775	-.1246	.7645	.7221
25	.136	.460	.7211	.4761	.2226	.0761	-.0754	-.0897	.7374	.6870
26	.156	.500	.7768	.4550	.2140	.0755	-.0657	-.0508	.6964	.6364
27	.187	.563	.6367	.6377	.2156	.0769	-.0509	.0641	.6036	.5311
28	.220	.623	.4974	.7056	.2675	.0762	-.0482	.2204	.4935	.3758
29	.251	.676	.3717	.5029	.4807	.1572	.0474	.2954	.3606	.2223
30	.285	.725	.2867	.3649	.6396	.3797	.2338	.5138	.2656	.0908
31	.320	.772	.1011	.1600	.4642	.4994	.4617	.6133	.0913	-.1514
32	.357	.815	-.0755	-.0391	.2058	.4532	.5598	.6207	-.0941	-.4181
33	.398	.857	-.1666	-.1414	.0263	.2538	.4470	.4158	-.2247	-.5930
34	.443	.895	-.3291	-.3180	-.1657	.0095	.2340	.2376	-.3906	-.9069
35	.502	.934	-.4448	-.4331	-.3538	-.2057	-.0223	.0607	-.5114	-1.2855
36	.580	.970	-.2209	-.2287	-.2168	-.1641	-.0716	-.0148	-.3755	-1.5792
37	.624	.984	.0966	.0818	.0526	.0468	.0782	.1020	-.0037	-1.6371
38	.693	.997	.1840	.1935	.2450	.2928	.3612	.4015	.4811	-1.5088
39	.767	1.000								-.8916
40	.822	.991								-.4932
41	.874	.972	-.3225	-.3270	-.3391	-.3165	-.3002	-.3203	-.3275	-.5037
42	.933	.934	-.3368	-.3446	-.3370	-.3334	-.3231	-.3485	-.3452	-.5504
43	.973	.895	-.3413	-.3488	-.3491	-.3397	-.3354	-.3443	-.3590	-.5842
44	.999	.856	-.3430	-.3480	-.3588	-.3481	-.3405	-.3384	-.3647	-.5949
45	1.035	.772	-.3568	-.3531	-.3606	-.3512	-.3470	-.3567	-.3724	-.5707
46	1.047	.675	-.3541	-.3589	-.3629	-.3490	-.3442	-.3455	-.3694	-.5326
47	1.027	.565	-.3460	-.3554	-.3607	-.3401	-.3404	-.3656	-.3604	-.4886
48	.955	.425	-.3423	-.3483	-.3499	-.3449	-.3382	-.3434	-.3516	-.4480
49	.821	.300	-.3234	-.3323	-.3272	-.3162	-.3162	-.3185	-.3269	-.4133
50	.594	.225	-.3119	-.3123	-.3048	-.3093	-.2990	-.2913	-.3145	-.3957
51	.018	.175	.6666	.4881	.2540	.1149	-.0099	-.0877	.9669	.9507
52	.037	.225	.6736	.4896	.2577	.1174	-.0158	-.1089	.9419	.9261
53	.057	.275	.6721	.4876	.2579	.1143	-.0249	-.1367	.9059	.8841
54	.078	.326	.6728	.4914	.2561	.1072	-.0329	-.1524	.8672	.8381
55	.100	.376	.6770	.4924	.2526	.1021	-.0486	-.1699	.8329	.7909
56	.122	.426	.6717	.4880	.2515	.0939	-.0498	-.1775	.7812	.7405
57	.222	.627	.5000	.6508	.2278	.0667	-.0690	-.1263	.4858	.3723
58	.323	.775	.0858	.1519	.4193	.4442	.2222	.0173	.0734	-.1589
59	.505	.937	-.4836	-.4664	-.3790	-.2241	-.0046	-.0133	-.5294	-1.3600
[c]60	.727	1.012	.1724	.2014	.2963	.3669	.4606	.4858	.5055	
61	.733	1.032	.3001	.3251	.3716	.3790	.3909	.3942	.3926	
62	.741	1.050	.0802	.0414	-.0602	-.1191	-.1323	-.1377	-.2007	
63	.758	1.073	-1.0787	-1.1104	-1.2002	-1.2398	-1.2345	-1.1964	-1.3568	
64	.778	1.087	-1.3498	-1.4064	-1.5277	-1.5920	-1.6236	-1.6475	-1.4812	
65	.799	1.095	-.5993	-.7004	-.9758	-1.2243	-1.4327	-1.5954	-.5402	
66	.833	1.099	-.3829	-.4217	-.4649	-.4783	-.4900	-.5515	-.4566	
67	.864	1.090	-.3556	-.3727	-.3779	-.3668	-.3590	-.3664	-.4040	
68	.888	1.070	-.3390	-.3491	-.3609	-.3476	-.3372	-.3276	-.3760	
69	.900	1.030	-.3430	-.3416	-.3426	-.3347	-.3337	-.3335	-.3612	
70	.890	1.000	-.3328	-.3416	-.3381	-.3324	-.3325	-.3256	-.3423	

[a]Orifices 1 to 17 on cone.
[b]Orifices 18 to 59 on afterbody.
[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(d) $M_\infty = 0.50$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p: Afterbody with fence and cone forebody for δ/d_c – 0.00	0.11	0.34	0.57	0.91	1.36	∞	Afterbody without fence
a1	0.000	0.000	1.0640	1.0611	1.0607	1.0594	1.0596	1.0629		
2	.011	.050	1.0308	1.0263	1.0205	1.0142	1.0141	1.0123		
3	.039	.100	1.0015	.9906	.9859	.9707	.9680	.9668		
4	.068	.150	.9731	.9570	.9403	.9489	.9336	.9209		
5	.097	.200	.9456	.9212	.9034	.8847	.8764	.8682		
6	.125	.250	.9133	.8819	.8547	.8344	.8207	.8087		
7	.154	.300	.8818	.9100	.8712	.7724	.7545	.7390		
8	.183	.350	.8449	.8193	.7603	.6905	.6648	.6417		
9	.212	.400	.7874	.6921	.5891	.5335	.4912	.4575		
10	.232	.435	.6895	.5115	.2958	.1807	.0922	.0409		
11	.240	.435	.6969	.5147	.2765	.1448	.0578	.0089		
12	.223	.400	.7013	.5165	.2795	.1479	.0591	.0321		
13	.199	.350	.7007	.5156	.2794	.1485	.0654	.0376		
14	.174	.300	.7017	.5175	.2814	.1547	.0741	.0399		
15	.150	.250	.7023	.5157	.3031	.1592	.0802	.0277		
16	.126	.200	.6991	.6007	.3811	.1664	.0804	.0339		
17	.102	.150	.6921	.5135	.2851	.1610	.0800	.0344		
b18	.007	.150	.6902	.5123	.2753	.1415	.0204	-.0485	1.0026	.9962
19	.026	.201	.6981	.5164	.2759	.1385	.0102	-.0751	.9786	.9679
20	.046	.250	.7009	.5141	.2743	.1320	-.0066	-.0980	.9475	.9355
21	.066	.301	.7000	.5145	.2700	.1283	-.0208	-.1124	.9147	.9019
22	.087	.350	.7010	.5128	.2707	.1196	-.0295	-.1122	.8769	.8590
23	.109	.401	.6576	.5094	.2601	.1103	-.0523	-.1339	.8259	.7970
24	.124	.434	.6945	.5041	.2521	.1026	-.0587	-.1374	.7854	.7542
25	.136	.460	.7424	.4982	.2422	.1074	-.0594	-.1303	.7616	.7233
26	.156	.500	.8047	.4817	.2376	.0952	-.0513	-.0915	.7241	.6787
27	.187	.563	.6624	.6472	.2344	.0992	-.0349	-.0251	.6332	.5745
28	.220	.623	.5291	.7272	.2627	.0914	-.0343	.0459	.5059	.4200
29	.251	.676	.3985	.5289	.4878	.1762	.0312	.1858	.3831	.2644
30	.285	.725	.3206	.3904	.6432	.3976	.2171	.4070	.3010	.1593
31	.320	.772	.1293	.1847	.4997	.5317	.4371	.5395	.1086	-.0922
32	.357	.815	-.0552	-.0134	.2379	.4859	.5308	.5270	-.0693	-.3500
33	.398	.857	-.1476	-.1199	.0548	.2940	.4446	.5253	-.1671	-.5209
34	.443	.895	-.3179	-.2973	-.1653	.0357	.2827	.3770	-.3433	-.8443
35	.502	.934	-.4288	-.4187	-.3302	-.1388	.0226	.1333	-.4520	-1.2335
36	.580	.970	-.1726	-.1847	-.1766	-.1324	-.0335	.0353	-.1005	-1.5017
37	.624	.984	.1275	.1249	.1106	.0933	.1200	.1330	.1580	-1.4897
38	.693	.997	.1703	.1917	.2630	.3164	.3795	.3924	.1734	-1.0982
39	.767	1.000								-.5129
40	.822	.991								-.4879
41	.874	.972	-.3287	-.3265	-.3239	-.3193	-.3046	-.3079	-.3342	-.5205
42	.933	.934	-.3331	-.3421	-.3328	-.3422	-.3174	-.3301	-.3504	-.5500
43	.973	.895	-.3485	-.3495	-.3412	-.3460	-.3254	-.3387	-.3553	-.5642
44	.999	.856	-.3522	-.3521	-.3425	-.3460	-.3264	-.3429	-.3625	-.5638
45	1.035	.772	-.3597	-.3541	-.3435	-.3508	-.3319	-.3653	-.3633	-.5353
46	1.047	.675	-.3559	-.3485	-.3437	-.3459	-.3237	-.3488	-.3659	-.5297
47	1.027	.565	-.3432	-.3389	-.3325	-.3429	-.3191	-.3247	-.3549	-.4826
48	.955	.425	-.3423	-.3456	-.3439	-.3312	-.3259	-.3151	-.3471	-.4340
49	.821	.300	-.3170	-.3249	-.3187	-.3074	-.3019	-.2974	-.3339	-.4001
50	.594	.225	-.3034	-.3118	-.3065	-.2964	-.2961	-.2804	-.3262	-.3789
51	.018	.175	.6950	.5122	.2736	.1374	.0021	-.0851	.9889	.5777
52	.037	.225	.7022	.5134	.2799	.1366	-.0011	-.1087	.9642	.9512
53	.057	.275	.7000	.5122	.2789	.1351	-.0116	-.1272	.9299	.9100
54	.078	.326	.7019	.5120	.2759	.1331	-.0165	-.1462	.8905	.8641
55	.100	.376	.7005	.5140	.2784	.1270	-.0245	-.1695	.8555	.8253
56	.122	.426	.6994	.5133	.2750	.1249	-.0233	-.1801	.8043	.7618
57	.222	.627	.5274	.6580	.2540	.0954	-.0558	-.1416	.5111	.4095
58	.323	.775	.1108	.1736	.4495	.3858	.1406	.0922	.0997	-.1221
59	.505	.937	-.4755	-.4629	-.3617	-.1932	.0423	.0212	-.4863	-1.3532
c60	.727	1.012	.1775	.2086	.3090	.3900	.4684	.4777	.1649	
61	.733	1.032	.2890	.3415	.4060	.4220	.4372	.4163	.0482	
62	.741	1.050	.1444	.1040	.0251	-.0325	-.0635	-.0777	-.2335	
63	.758	1.073	-1.0262	-1.0636	-1.1299	-1.1628	-1.1565	-1.1177	-1.0567	
64	.778	1.087	-1.3674	-1.3929	-1.4631	-1.5192	-1.5551	-1.5846	-1.3340	
65	.799	1.095	-.5207	-.5717	-.6548	-.7948	-1.0661	-1.2433	-.7977	
66	.833	1.099	-.3946	-.4207	-.4479	-.4826	-.4832	-.5258	-.4918	
67	.864	1.090	-.3623	-.3721	-.3734	-.3827	-.3557	-.3666	-.4471	
68	.888	1.070	-.3479	-.3529	-.3426	-.3501	-.3268	-.3379	-.3943	
69	.900	1.030	-.3470	-.3418	-.3283	-.3356	-.3148	-.3420	-.3553	
70	.890	1.000	-.3363	-.3281	-.3255	-.3267	-.3047	-.3252	-.3494	

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(e) $M_\infty = 0.60$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
[a]1	0.000	0.000	1.0929	1.0936	1.0916	1.0887	1.0911	1.0936		
2	.011	.050	1.0598	1.0564	1.0514	1.0444	1.0448	1.0448		
3	.039	.100	1.0328	1.0227	1.0147	1.0029	.9991	.9976		
4	.068	.150	1.0038	.9883	.9724	.9720	.9607	.9511		
5	.097	.200	.9743	.9556	.9310	.9147	.9058	.8987		
6	.125	.250	.9440	.9148	.8856	.8629	.8511	.8406		
7	.154	.300	.9118	.9238	.8845	.8025	.7854	.7678		
8	.183	.350	.8769	.8449	.7887	.7200	.6939	.6745		
9	.212	.400	.8197	.7234	.6221	.5676	.5202	.4877		
10	.232	.435	.7198	.5413	.3390	.2251	.1390	.0549		
11	.240	.435	.7284	.5495	.3078	.1715	.0790	.0243		
12	.223	.400	.7338	.5480	.3036	.1737	.0867	.0264		
13	.199	.350	.7311	.5497	.3109	.1764	.0903	.0365		
14	.174	.300	.7348	.5496	.3122	.1811	.0901	.0428		
15	.150	.250	.7326	.5500	.3339	.1870	.0922	.0431		
16	.126	.200	.7312	.6188	.3893	.1954	.0949	.0390		
17	.102	.150	.7258	.5463	.3168	.1899	.0955	.0360		
[b]18	.007	.150	.7247	.5483	.3097	.1711	.0426	-.0481	1.0329	1.0273
19	.026	.201	.7317	.5505	.3106	.1654	.0320	-.0670	1.0112	1.0024
20	.046	.250	.7366	.5522	.3077	.1559	.0138	-.0920	.9796	.9701
21	.066	.301	.7339	.5483	.3035	.1503	.0020	-.1071	.9487	.9336
22	.087	.350	.7336	.5498	.3000	.1439	-.0071	-.1103	.9149	.8949
23	.109	.401	.7324	.5434	.2904	.1319	-.0259	-.1314	.8643	.8387
24	.124	.434	.7242	.5388	.2803	.1244	-.0358	-.1375	.8254	.7937
25	.136	.460	.7776	.5309	.2787	.1212	-.0370	-.1277	.8013	.7697
26	.156	.500	.8375	.5142	.2684	.1175	-.0324	-.0959	.7675	.7309
27	.187	.563	.6989	.6331	.2722	.1210	-.0167	-.0232	.6787	.6281
28	.220	.623	.5616	.7672	.2958	.1136	-.0164	.0015	.5516	.4786
29	.251	.676	.4363	.5676	.4986	.1776	.0683	.1281	.4337	.3305
30	.285	.725	.3580	.4317	.6958	.3755	.2480	.3345	.3542	.2228
31	.320	.772	.1672	.2193	.5405	.5648	.3975	.5058	.1659	-.0106
32	.357	.815	-.0223	.0228	.2941	.5376	.5389	.6224	-.0202	-.2623
33	.398	.857	-.1149	-.0849	.1061	.3515	.5086	.5738	-.1152	-.4310
34	.443	.895	-.2959	-.2740	-.1241	.0912	.3493	.4543	-.2953	-.7594
35	.502	.934	-.4177	-.3986	-.2933	-.1330	.0908	.2287	-.3805	-1.1863
36	.580	.970	-.1191	-.1239	-.1145	-.0657	.0349	.1170	.0701	-1.4591
37	.624	.984	.1630	.1705	.1729	.1684	.1869	.2295	.1811	-1.2357
38	.693	.997	.1887	.2114	.2870	.3589	.4177	.4781	.1919	-.5544
39	.767	1.000								-.4373
40	.822	.991								-.4507
41	.874	.972	-.3181	-.3163	-.3112	-.3153	-.3071	-.3009	-.3184	-.4942
42	.933	.934	-.3281	-.3318	-.3244	-.3252	-.3229	-.3216	-.3381	-.4939
43	.973	.895	-.3382	-.3388	-.3271	-.3330	-.3326	-.3368	-.3464	-.4958
44	.995	.856	-.3480	-.3446	-.3317	-.3365	-.3390	-.3388	-.3427	-.5002
45	1.035	.772	-.3497	-.3461	-.3363	-.3452	-.3406	-.3401	-.3440	-.4917
46	1.047	.675	-.3494	-.3445	-.3376	-.3405	-.3309	-.3320	-.3409	-.4620
47	1.027	.565	-.3451	-.3429	-.3381	-.3377	-.3210	-.3311	-.3327	-.4265
48	.955	.425	-.3274	-.3398	-.3337	-.3271	-.3211	-.3357	-.3438	-.3977
49	.821	.300	-.3045	-.3142	-.3068	-.3089	-.3028	-.3120	-.3194	-.3678
50	.694	.225	-.2872	-.2996	-.2968	-.3011	-.2956	-.2935	-.3034	-.3467
51	.018	.175	.7285	.5467	.3070	.1587	.0221	-.0761	1.0180	1.0054
52	.037	.225	.7338	.5509	.3089	.1577	.0128	-.0977	.9946	.9814
53	.057	.275	.7342	.5483	.3099	.1557	.0075	-.1157	.9598	.9433
54	.078	.326	.7320	.5463	.3061	.1554	.0024	-.1339	.9241	.8957
55	.100	.376	.7319	.5438	.3087	.1491	-.0022	-.1481	.8864	.8613
56	.122	.426	.7306	.5481	.3090	.1509	-.0030	-.1583	.8360	.7999
57	.222	.627	.5595	.6992	.2863	.1297	-.0282	-.1525	.5480	.4577
58	.323	.775	.1398	.2128	.4704	.3608	.1232	.0261	.1395	-.0563
59	.505	.937	-.4746	-.4519	-.3334	-.1491	.0816	.0722	-.4425	-1.3821
[c]60	.727	1.012	.1821	.2177	.3345	.4239	.5212	.5688	.1579	
61	.733	1.032	.2907	.3531	.4388	.4783	.4826	.5180	.0522	
62	.741	1.050	.2320	.1959	.1153	.0773	.0392	.0501	-.1815	
63	.758	1.073	-.9146	-.9486	-1.0193	-1.0337	-.9979	-.9707	-.8592	
64	.778	1.087	-1.4683	-1.4928	-1.5286	-1.5306	-1.5028	-1.5018	-1.2144	
65	.795	1.095	-.4685	-.5041	-.5522	-.6189	-.7840	-.9512	-.8531	
66	.833	1.099	-.3807	-.4034	-.4194	-.4418	-.4678	-.4835	-.4428	
67	.864	1.090	-.3505	-.3589	-.3502	-.3598	-.3624	-.3569	-.3628	
68	.888	1.070	-.3422	-.3439	-.3307	-.3344	-.3360	-.3274	-.3371	
69	.900	1.030	-.3354	-.3334	-.3209	-.3283	-.3231	-.3202	-.3306	
70	.930	1.000	-.3326	-.3271	-.3209	-.3249	-.3103	-.3156	-.3235	

[a]Orifices 1 to 17 on cone.
[b]Orifices 18 to 59 on afterbody.
[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(f) $M_\infty = 0.70$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
[a]1	0.000	0.000	1.1292	1.1273	1.1258	1.1270	1.1260	1.1282		
2	.011	.050	1.0955	1.0921	1.0870	1.0818	1.0804	1.0763		
3	.039	.100	1.0678	1.0609	1.0490	1.0395	1.0363	1.0327		
4	.068	.150	1.0381	1.0271	1.0112	1.0038	.9965	.9863		
5	.097	.200	1.0108	.9910	.9697	.9527	.9464	.9365		
6	.125	.250	.9834	.9552	.9257	.9024	.8925	.8801		
7	.154	.300	.9508	.9600	.9143	.8419	.8228	.8079		
8	.183	.350	.9199	.8824	.8254	.7616	.7379	.7148		
9	.212	.400	.8630	.7691	.6665	.6071	.5631	.5283		
10	.232	.435	.7660	.5872	.3862	.2655	.1759	.0897		
11	.240	.435	.7739	.5945	.3563	.2098	.1093	.0438		
12	.223	.400	.7765	.5969	.3577	.2138	.1157	.0624		
13	.199	.350	.7775	.5963	.3585	.2166	.1211	.0551		
14	.174	.300	.7768	.5969	.3610	.2210	.1233	.0493		
15	.150	.250	.7771	.5979	.3751	.2270	.1260	.0431		
16	.126	.200	.7756	.6552	.4179	.2284	.1285	.0468		
17	.102	.150	.7699	.5953	.3569	.2279	.1249	.0487		
[b]18	.007	.150	.7683	.5922	.3568	.2071	.0868	-.0255	1.0710	1.0660
19	.026	.201	.7746	.5962	.3591	.2044	.0757	-.0459	1.0505	1.0444
20	.046	.250	.7782	.5983	.3565	.2008	.0603	-.0662	1.0198	1.0127
21	.066	.301	.7746	.5953	.3522	.1951	.0437	-.0789	.9902	.9790
22	.087	.350	.7750	.5934	.3480	.1882	.0349	-.0812	.9571	.9422
23	.109	.401	.7743	.5911	.3417	.1805	.0180	-.1018	.9076	.8868
24	.124	.434	.7682	.5884	.3311	.1722	.0076	-.1134	.8684	.8433
25	.135	.467	.8292	.5806	.3272	.1632	.0056	-.1089	.8445	.8163
26	.155	.500	.8825	.5677	.2188	.1610	.0063	-.0928	.8144	.7834
27	.187	.563	.7500	.6809	.3178	.1618	.0163	-.0443	.7316	.6860
28	.220	.623	.6137	.8097	.3307	.1514	.0090	-.0043	.6083	.5466
29	.251	.676	.4899	.6208	.5078	.2150	.0713	.1255	.4911	.4070
30	.285	.725	.4149	.4881	.6808	.4276	.2402	.2825	.4126	.3162
31	.320	.772	.2222	.2800	.6076	.6042	.4113	.4061	.2267	.0925
32	.357	.815	.0369	.0826	.3660	.5826	.5594	.5060	.0465	-.1365
33	.398	.857	-.0649	-.0263	.1700	.4190	.5761	.5845	-.0532	-.2835
34	.443	.895	-.2517	-.2204	-.0633	.1721	.4306	.5299	-.2355	-.5883
35	.502	.934	-.3671	-.3423	-.2343	-.0566	.1906	.3323	-.3099	-.9628
36	.580	.970	-.0072	-.0120	-.0212	.0236	.1301	.2232	.1948	-.8976
37	.624	.984	.2203	.2339	.2621	.2551	.2776	.3160	.2269	-.6451
38	.693	.997	.2257	.2492	.3409	.4148	.4827	.5317	.2366	-.5012
39	.767	1.000								-.4972
40	.822	.991								-.5125
41	.874	.972	-.3099	-.3066	-.3045	-.3006	-.2934	-.3018	-.3118	-.5091
42	.933	.934	-.3195	-.3247	-.3222	-.3152	-.3162	-.3193	-.3267	-.5016
43	.973	.895	-.3257	-.3292	-.3294	-.3202	-.3260	-.3313	-.3293	-.4887
44	.999	.855	-.3275	-.3313	-.3341	-.3257	-.3311	-.3338	-.3346	-.4871
45	1.035	.772	-.3350	-.3329	-.3306	-.3255	-.3339	-.3320	-.3377	-.4743
46	1.047	.675	-.3332	-.3292	-.3289	-.3215	-.3271	-.3136	-.3326	-.4407
47	1.027	.565	-.3304	-.3248	-.3286	-.3142	-.3220	-.3196	-.3352	-.4027
48	.955	.425	-.3259	-.3349	-.3175	-.3325	-.3003	-.3272	-.3385	-.3912
49	.921	.300	-.3085	-.3121	-.2997	-.3093	-.2807	-.3103	-.3186	-.3659
50	.694	.225	-.2939	-.2973	-.2879	-.2971	-.2719	-.2906	-.3079	-.3475
51	.018	.175	.7686	.5926	.3544	.2016	.0612	-.0566	1.0553	1.0485
52	.037	.225	.7739	.5944	.3553	.2004	.0533	-.0695	1.0350	1.0235
53	.057	.275	.7762	.5961	.3561	.2006	.0474	-.0803	1.0014	.9872
54	.078	.326	.7754	.5972	.3536	.1994	.0423	-.0933	.9653	.9461
55	.100	.375	.7782	.5954	.3551	.1971	.0396	-.1056	.9295	.9095
56	.122	.426	.7753	.5970	.3534	.1962	.0368	-.1132	.8811	.8533
57	.222	.627	.6121	.7394	.3369	.1678	.0084	-.1315	.6018	.5318
58	.323	.775	.2050	.2706	.5194	.3785	.1199	-.0038	.2057	.0571
59	.505	.937	-.4146	-.3943	-.2655	-.0658	.1568	.0703	-.3583	-1.1135
[c]60	.727	1.012	.2221	.2588	.3768	.4758	.5603	.6204	.1975	
61	.733	1.032	.3152	.3843	.4932	.5330	.5550	.5722	.1038	
62	.741	1.050	.3305	.3093	.2562	.2036	.1729	.1762	-.0919	
63	.759	1.073	-.6189	-.5604	-.7419	-.7803	-.7501	-.7053	-.6644	
64	.778	1.097	-1.3397	-1.3424	-1.3315	-1.3040	-1.2530	-1.2041	-1.0530	
65	.799	1.075	-.4826	-.5036	-.5426	-.5832	-.6518	-.7601	-.7579	
66	.833	1.049	-.5593	-.3745	-.3323	-.4005	-.4227	-.4442	-.3874	
67	.864	1.030	-.3256	-.3332	-.3383	-.2344	-.3461	-.3504	-.3337	
68	.898	1.070	-.3189	-.3244	-.3303	-.3232	-.3300	-.3284	-.3244	
69	.930	1.040	-.3223	-.3176	-.3179	-.3124	-.3215	-.3169	-.3257	
70	.990	1.000	-.3193	-.3107	-.3130	-.3046	-.3132	-.3047	-.3206	

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(g) $M_\infty = 0.80$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p: Afterbody with fence and cone forebody for δ/d_c – 0.00	0.11	0.34	0.57	0.91	1.36	∞	Afterbody without fence
a1	0.000	0.000	1.1702	1.1708	1.1709	1.1665	1.1679	1.1704		
2	.011	.050	1.1416	1.1363	1.1318	1.1249	1.1245	1.1199		
3	.039	.100	1.1133	1.1027	1.0949	1.0840	1.0797	1.0772		
4	.068	.150	1.0867	1.0724	1.0574	1.0462	1.0398	1.0317		
5	.097	.200	1.0601	1.0400	1.0168	1.0012	.9922	.9829		
6	.125	.250	1.0313	1.0030	.9717	.9549	.9369	.9272		
7	.154	.300	1.0009	.9993	.9607	.8950	.8756	.8575		
8	.183	.350	.9672	.9289	.8755	.8161	.7868	.7661		
9	.212	.400	.9157	.8221	.7245	.6550	.6191	.5846		
10	.232	.435	.8208	.6463	.4455	.3236	.2231	.1440		
11	.240	.435	.8287	.6557	.4173	.2673	.1441	.0564		
12	.223	.400	.8328	.6569	.4171	.2717	.1491	.0634		
13	.199	.350	.8330	.6550	.4176	.2750	.1524	.0663		
14	.174	.300	.8326	.6561	.4179	.2749	.1534	.0676		
15	.150	.250	.8323	.6559	.4337	.2795	.1582	.0679		
16	.126	.200	.8310	.7034	.4668	.2829	.1603	.0690		
17	.102	.150	.8258	.6518	.4174	.2798	.1592	.0696		
b18	.007	.150	.8221	.6539	.4142	.2650	.1208	.0018	1.1153	1.1117
19	.026	.201	.8319	.6565	.4155	.2632	.1150	-.0128	1.0338	1.0002
20	.046	.250	.8330	.6559	.4154	.2595	.1048	-.0261	1.0671	1.0557
21	.066	.301	.8320	.6563	.4120	.2532	.0943	-.0355	1.0344	1.0262
22	.087	.350	.8336	.6561	.4068	.2483	.0860	-.0446	1.0062	.9033
23	.109	.401	.8303	.6528	.3999	.2355	.0714	-.0626	.9553	.9366
24	.124	.434	.8256	.6478	.3969	.2275	.0658	-.0721	.9219	.9111
25	.136	.460	.8676	.6429	.3939	.2272	.0595	-.0717	.8938	.8769
26	.156	.500	.9362	.6301	.3884	.2245	.0621	-.0638	.8709	.8430
27	.187	.563	.9070	.7321	.3799	.2237	.0630	-.0476	.7374	.7526
28	.220	.623	.6747	.8735	.3840	.2104	.0524	-.0495	.6677	.6217
29	.251	.676	.5584	.6895	.5375	.2547	.0859	.0015	.5552	.4975
30	.285	.725	.4844	.5574	.7234	.4422	.2178	.1310	.4915	.4097
31	.320	.772	.2961	.3582	.6709	.6075	.3468	.2668	.3003	.2046
32	.357	.815	.1116	.1606	.4473	.6396	.5200	.4308	.1218	-.0071
33	.398	.857	.0109	.0482	.2515	.4394	.5781	.5614	.0175	-.1407
34	.443	.895	-.1872	-.1576	.0149	.2644	.5070	.5712	-.1760	-.4180
35	.502	.934	-.3023	-.2837	-.1615	.0345	.2944	.4363	-.2324	-.7590
36	.580	.970	.1270	.1134	.0944	.1286	.2346	.3319	.2824	-.8153
37	.624	.984	.2778	.2966	.3491	.3593	.3670	.3974	.2751	-.5425
38	.693	.997	.2727	.2997	.4025	.4815	.5535	.6041	.2971	-.5161
39	.767	1.000								-.5077
40	.822	.991								-.4874
41	.874	.972	-.2975	-.3002	-.2962	-.2965	-.2904	-.3002	-.3021	-.4790
42	.933	.934	-.3069	-.3149	-.3147	-.3169	-.3106	-.3157	-.3183	-.4815
43	.973	.895	-.3146	-.3191	-.3169	-.3208	-.3173	-.3265	-.3280	-.4921
44	.999	.856	-.3156	-.3207	-.3198	-.3219	-.3142	-.3287	-.3309	-.4843
45	1.035	.772	-.3183	-.3264	-.3229	-.3241	-.3143	-.3257	-.3330	-.4748
46	1.047	.675	-.3186	-.3242	-.3225	-.3188	-.3083	-.3159	-.3305	-.4500
47	1.027	.565	-.3206	-.3260	-.3184	-.3092	-.3053	-.3071	-.3258	-.4331
48	.955	.425	-.3219	-.3207	-.3156	-.3122	-.3131	-.3267	-.3242	-.4294
49	.821	.300	-.3076	-.3068	-.3009	-.2981	-.2956	-.3088	-.3088	-.3932
50	.694	.225	-.2990	-.2943	-.2883	-.2394	-.2884	-.2881	-.2943	-.3640
51	.018	.175	.8248	.6525	.4134	.2576	.1061	-.0202	1.1025	1.0949
52	.037	.225	.8321	.6560	.4141	.2580	.1026	-.0304	1.0818	1.0731
53	.057	.275	.8313	.6558	.4139	.2592	.0977	-.0399	1.0485	1.0368
54	.078	.326	.8320	.6545	.4140	.2579	.0992	-.0486	1.0139	1.0023
55	.100	.376	.8317	.6538	.4154	.2579	.0938	-.0548	.9815	.9671
56	.122	.426	.8300	.6547	.4156	.2566	.0925	-.0606	.9332	.9135
57	.222	.627	.6738	.7947	.3932	.2308	.0611	-.0815	.6641	.6191
58	.323	.775	.2782	.3471	.5950	.4103	.1540	.0298	.2794	.1838
59	.505	.937	-.3574	-.3322	-.1919	.0300	.2541	.2326	-.2801	-.8512
c60	.727	1.012	.2708	.3062	.4387	.5422	.6263	.6723	.2544	
61	.733	1.032	.3487	.4245	.5543	.6083	.6227	.6159	.1655	
62	.741	1.050	.4163	.4128	.3801	.3296	.2964	.2959	.0025	
63	.758	1.073	-.3229	-.3753	-.4747	-.5240	-.5088	-.4619	-.4623	
64	.778	1.087	-.9924	-1.0020	-1.0079	-.9960	-.9593	-.9167	-.8361	
65	.799	1.095	-.4337	-.4545	-.4790	-.5043	-.5448	-.6224	-.6327	
66	.833	1.099	-.3395	-.3581	-.3700	-.3895	-.4031	-.4237	-.3654	
67	.864	1.090	-.3156	-.3247	-.3270	-.3376	-.3387	-.3479	-.3419	
68	.888	1.070	-.3123	-.3168	-.3190	-.3245	-.3183	-.3284	-.3233	
69	.900	1.030	-.3101	-.3161	-.3127	-.3153	-.3051	-.3136	-.3213	
70	.890	1.000	-.3067	-.3092	-.3074	-.3050	-.2958	-.3044	-.3173	

[a]Orifices 1 to 17 on cone.
[b]Orifices 18 to 59 on afterbody.
[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(h) $M_\infty = 0.85$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
1[a]	0.000	0.000	1.1944	1.1945	1.1947	1.1925	1.1930	1.1936		
2	.011	.050	1.1630	1.1596	1.1558	1.1480	1.1469	1.1489		
3	.039	.100	1.1374	1.1291	1.1174	1.1089	1.1044	1.1018		
4	.068	.150	1.1097	1.0974	1.0822	1.0724	1.0660	1.0577		
5	.097	.200	1.0836	1.0646	1.0423	1.0280	1.0176	1.0107		
6	.125	.250	1.0558	1.0310	1.0017	.9780	.9661	.9547		
7	.154	.300	1.0278	1.0259	.9845	.9210	.9000	.8862		
8	.183	.350	.9941	.9598	.8998	.8460	.8159	.7957		
9	.212	.400	.9446	.8531	.7527	.6979	.6480	.6150		
10	.232	.435	.8491	.6806	.4788	.3597	.2531	.1746		
11	.240	.435	.8596	.6886	.4506	.2992	.1677	.0840		
12	.223	.400	.8606	.6889	.4516	.3029	.1743	.0908		
13	.199	.350	.8621	.6915	.4530	.3023	.1779	.0931		
14	.174	.300	.8630	.6889	.4531	.3064	.1805	.0902		
15	.150	.250	.8620	.6907	.4650	.3078	.1818	.0888		
16	.126	.200	.8621	.7337	.4966	.3107	.1869	.0893		
17	.102	.150	.8540	.6860	.4513	.3098	.1870	.0827		
18[b]	.007	.150	.8523	.6870	.4514	.2986	.1507	.0231	1.1394	1.1374
19	.026	.201	.8589	.6900	.4515	.2961	.1421	.0142	1.1216	1.1152
20	.046	.250	.8628	.6909	.4498	.2922	.1345	-.0014	1.0917	1.0874
21	.066	.301	.8620	.6900	.4471	.2881	.1275	-.0131	1.0646	1.0567
22	.087	.350	.8615	.6888	.4438	.2838	.1207	-.0182	1.0607	1.0224
23	.109	.401	.8595	.6867	.4401	.2727	.1083	-.0370	.9889	.9714
24	.124	.434	.8574	.6826	.4354	.2682	.0976	-.0454	.9511	.9342
25	.136	.460	.8985	.6766	.4291	.2648	.0968	-.0462	.9275	.9115
26	.156	.500	.9655	.6639	.4225	.2589	.0934	-.0408	.8998	.8788
27	.187	.563	.8386	.7744	.4194	.2579	.0964	-.0261	.8194	.7927
28	.220	.623	.7116	.9042	.4216	.2445	.0816	-.0306	.7012	.6694
29	.251	.676	.5952	.7238	.5669	.2848	.1050	.0170	.5951	.5439
30	.285	.725	.5209	.5967	.7620	.4441	.2252	.1502	.5187	.4637
31	.320	.772	.3406	.3983	.7094	.6087	.3378	.2629	.3426	.2694
32	.357	.815	.1580	.2068	.4904	.6627	.5017	.4324	.1633	.0653
33	.398	.857	.0558	.0897	.2979	.5366	.5872	.5746	.0581	-.0619
34	.443	.895	-.1493	-.1196	.0594	.3100	.5469	.5683	-.1396	-.3244
35	.502	.934	-.2728	-.2521	-.1160	.0834	.3451	.4828	-.1910	-.6441
36	.580	.970	.1852	.1765	.1550	.1811	.2878	.3854	.3129	-.8636
37	.624	.984	.3056	.3300	.3937	.4008	.4091	.4375	.3039	-.6251
38	.693	.997	.3001	.3290	.4376	.5152	.5743	.5966	.3313	-.4866
39	.767	1.007								-.4680
40	.822	.991								-.4447
41	.874	.972	-.2890	-.2995	-.2942	-.2891	-.2883	-.2901	-.3046	-.4364
42	.933	.934	-.3064	-.3164	-.3092	-.2999	-.3053	-.3089	-.3157	-.4399
43	.973	.895	-.3129	-.3186	-.3152	-.3070	-.3151	-.3211	-.3228	-.4431
44	.999	.856	-.3120	-.3192	-.3202	-.3110	-.3159	-.3294	-.3274	-.4449
45	1.035	.772	-.3136	-.3227	-.3183	-.3128	-.3169	-.3247	-.3257	-.4397
46	1.047	.675	-.3132	-.3185	-.3207	-.3111	-.3125	-.3137	-.3257	-.4215
47	1.027	.565	-.3184	-.3146	-.3215	-.3089	-.3128	-.3043	-.3252	-.4057
48	.955	.425	-.3142	-.3122	-.3065	-.3095	-.3086	-.3222	-.3099	-.4209
49	.821	.300	-.3008	-.2987	-.2953	-.2964	-.2953	-.3012	-.2932	-.3936
50	.694	.225	-.2867	-.2893	-.2866	-.2864	-.2871	-.2850	-.2833	.3677
51	.018	.175	.8552	.6866	.4473	.2925	.1379	.0038	1.1268	1.1223
52	.037	.225	.8606	.6886	.4492	.2937	.1349	-.0022	1.1054	1.1002
53	.057	.275	.8610	.6902	.4519	.2916	.1339	-.0120	1.0746	1.0672
54	.078	.326	.8626	.6889	.4512	.2927	.1290	-.0181	1.0419	1.0294
55	.100	.376	.8612	.6898	.4506	.2921	.1276	-.0264	1.0092	.9967
56	.122	.426	.8614	.6887	.4483	.2915	.1242	-.0287	.9639	.9449
57	.222	.627	.7084	.8098	.4285	.2692	.0966	-.0582	.7004	.6614
58	.323	.775	.3225	.3896	.6185	.4261	.1770	.0215	.3243	.2472
59	.505	.937	-.3292	-.3034	-.1501	.0793	.3077	.2220	-.2251	-.7286
60[c]	.727	1.012	.2985	.3367	.4722	.5757	.6578	.6825	.2851	
61	.733	1.032	.3729	.4466	.5843	.6390	.6395	.6356	.2054	
62	.741	1.050	.4555	.4557	.4344	.3807	.3425	.3340	.0565	
63	.758	1.073	-.2021	-.2527	-.3597	-.4131	-.3985	-.3448	-.3652	
64	.778	1.087	-.8501	-.8580	-.8779	-.8706	-.8367	-.7825	-.7244	
65	.795	1.095	-.4072	-.4308	-.4475	-.4633	-.5084	-.5733	-.5803	
66	.833	1.099	-.3331	-.3523	-.3625	-.3646	-.3876	-.4070	-.3617	
67	.864	1.090	-.3159	-.3259	-.3274	-.3209	-.3359	-.3427	-.3372	
68	.888	1.070	-.3088	-.3173	-.3227	-.3145	-.3200	-.3289	-.3213	
69	.900	1.030	-.3051	-.3133	-.3122	-.3058	-.3087	-.3132	-.3156	
70	.890	1.000	-.3015	-.3066	-.3111	-.3001	-.3020	-.3025	-.3134	

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(i) $M_{\infty} = 0.90$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
[a]1	0.000	0.000	1.2201	1.2204	1.2187	1.2174	1.2181	1.2220		
2	.011	.050	1.1920	1.1843	1.1811	1.1751	1.1750	1.1731		
3	.039	.100	1.1634	1.1567	1.1461	1.1359	1.1326	1.1304		
4	.068	.150	1.1385	1.1255	1.1095	1.0982	1.0899	1.0881		
5	.097	.200	1.1092	1.0940	1.0713	1.0562	1.0467	1.0397		
6	.125	.250	1.0842	1.0579	1.0292	1.0102	.9950	.9861		
7	.154	.300	1.0559	1.0523	1.0106	.9527	.9337	.9172		
8	.183	.350	1.0258	.9874	.9322	.8783	.8490	.8284		
9	.212	.400	.9776	.8846	.7894	.7327	.6851	.6514		
10	.232	.435	.8811	.7144	.5184	.3996	.2871	.2155		
11	.240	.435	.8942	.7279	.4881	.3391	.2056	.1076		
12	.223	.400	.8955	.7254	.4891	.3402	.2094	.1122		
13	.199	.350	.8945	.7264	.4893	.3428	.2115	.1149		
14	.174	.300	.8954	.7264	.4916	.3438	.2144	.1135		
15	.150	.250	.8952	.7259	.5024	.3464	.2150	.1106		
16	.126	.200	.8944	.7662	.5320	.3519	.2184	.1100		
17	.102	.150	.8893	.7201	.4912	.3475	.2171	.1057		
[b]18	.007	.150	.8854	.7239	.4873	.3367	.1856	.0581	1.1669	1.1633
19	.026	.201	.8952	.7243	.4868	.3351	.1816	.0455	1.1495	1.1421
20	.046	.250	.8944	.7282	.4870	.3324	.1744	.0342	1.1224	1.1151
21	.066	.301	.8957	.7264	.4842	.3264	.1657	.0243	1.0909	1.0854
22	.087	.350	.8927	.7254	.4819	.3252	.1607	.0172	1.0610	1.0517
23	.109	.401	.8928	.7220	.4760	.3177	.1457	.0013	1.0181	1.0023
24	.124	.434	.8891	.7196	.4727	.3123	.1388	-.0076	.9819	.9672
25	.136	.460	.9301	.7143	.4707	.3066	.1352	-.0088	.9625	.9435
26	.156	.500	.9981	.7017	.4640	.3036	.1349	-.0075	.9309	.9143
27	.187	.563	.8706	.7398	.4583	.2991	.1350	-.0003	.8554	.8307
28	.220	.623	.7488	.9305	.4547	.2860	.1235	-.0087	.7408	.7103
29	.251	.676	.6362	.7624	.5895	.3173	.1450	.0242	.6306	.5927
30	.285	.725	.5620	.6368	.7937	.4697	.2493	.1339	.5596	.5136
31	.320	.772	.3854	.4464	.7481	.6370	.3652	.2324	.3898	.3266
32	.357	.815	.2083	.2546	.5359	.6921	.5311	.3815	.2135	.1328
33	.398	.857	.1038	.1384	.3434	.5873	.6365	.5231	.1086	.0095
34	.443	.895	-.1037	-.0773	.1084	.3611	.5826	.5811	-.0958	-.2425
35	.502	.934	-.2456	-.2201	-.0729	.1366	.3978	.5219	-.1401	-.5413
36	.580	.970	.2469	.2400	.2139	.2398	.3450	.4360	.3513	-.8583
37	.624	.984	.3416	.3679	.4373	.4539	.4603	.4791	.3410	-.5325
38	.693	.997	.3347	.3649	.4782	.5597	.6149	.6273	.3692	-.4530
39	.767	1.000								-.4323
40	.822	.991								-.4117
41	.874	.972	-.2806	-.2816	-.2926	-.2855	-.2833	-.2790	-.2953	-.4034
42	.933	.934	-.2994	-.3010	-.2950	-.3002	-.3059	-.2991	-.3037	-.4053
43	.973	.895	-.3014	-.3055	-.3017	-.3061	-.3122	-.3120	-.3146	-.4131
44	.999	.856	-.3034	-.3079	-.3060	-.3080	-.3155	-.3175	-.3205	-.4136
45	1.035	.772	-.3066	-.3095	-.3112	-.3086	-.3143	-.3147	-.3221	-.4095
46	1.047	.675	-.3079	-.3104	-.3105	-.3063	-.3059	-.2991	-.3215	-.3980
47	1.027	.565	-.3081	-.3084	-.3105	-.3054	-.3005	-.2963	-.3202	-.3903
48	.955	.425	-.3085	-.3045	-.2952	-.3084	-.3020	-.3083	-.3123	-.3970
49	.821	.300	-.2943	-.2927	-.2936	-.2910	-.2820	-.2891	-.2973	-.3752
50	.694	.225	-.2873	-.2822	-.2965	-.2837	-.2727	-.2705	-.2852	-.3534
51	.018	.175	.8687	.7232	.4859	.3299	.1755	.0391	1.1511	1.1493
52	.037	.225	.8917	.7264	.4864	.3329	.1744	.0324	1.1325	1.1279
53	.057	.275	.8939	.7252	.4879	.3339	.1708	.0266	1.1031	1.0948
54	.078	.326	.8949	.7263	.4892	.3339	.1686	.0206	1.0718	1.0606
55	.100	.376	.8950	.7258	.4891	.3324	.1658	.0161	1.0405	1.0278
56	.122	.426	.8961	.7244	.4882	.3310	.1655	.0117	.9931	.9805
57	.222	.627	.7445	.8570	.4648	.3054	.1346	-.0212	.7387	.7077
58	.323	.775	.3707	.4394	.6700	.4772	.2088	.0438	.3720	.3075
59	.505	.937	-.3010	-.2684	-.1060	.1298	.3536	.2736	-.1718	-.6180
[c]60	.727	1.012	.3331	.3733	.5119	.6163	.5943	.7065	.3360	
61	.733	1.032	.4009	.4800	.6220	.6822	.5835	.6571	.2548	
62	.741	1.050	.4960	.5061	.4914	.4446	.4011	.3875	.1138	
63	.758	1.073	-.0894	-.1432	-.2486	-.3057	-.2941	-.2305	-.2750	
64	.778	1.087	-.7048	-.7233	-.7593	-.7569	-.7267	-.6552	-.6221	
65	.799	1.095	-.3938	-.4075	-.4188	-.4335	-.4724	-.5375	-.5476	
66	.833	1.099	-.3210	-.3327	-.3403	-.3530	-.3785	-.3869	-.3555	
67	.864	1.090	-.3052	-.3112	-.3118	-.3130	-.3294	-.3301	-.3285	
68	.888	1.070	-.3010	-.3067	-.3065	-.3098	-.3179	-.3164	-.3152	
69	.900	1.030	-.2988	-.3018	-.3042	-.3016	-.3060	-.3033	-.3136	
70	.890	1.000	-.2976	-.3002	-.3004	-.2962	-.2960	-.2899	-.3109	

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(j) $M_\infty = 0.95$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
[a]1	0.000	0.000	1.2475	1.2475	1.2476	1.2432	1.2445	1.2476		
2	.011	.050	1.2203	1.2145	1.2100	1.2043	1.2027	1.2034		
3	.039	.100	1.1926	1.1836	1.1746	1.1657	1.1609	1.1593		
4	.068	.150	1.1676	1.1550	1.1395	1.1273	1.1213	1.1188		
5	.097	.200	1.1422	1.1234	1.1025	1.0862	1.0774	1.0692		
6	.125	.250	1.1161	1.0903	1.0617	1.0404	1.0267	1.0172		
7	.154	.300	1.0889	1.0837	1.0409	.9858	.9654	.9498		
8	.183	.350	1.0578	1.0193	.9645	.9141	.8843	.8644		
9	.212	.400	1.0092	.9224	.8267	.7703	.7210	.6891		
10	.232	.435	.9193	.7516	.5607	.4423	.3290	.2604		
11	.240	.435	.9266	.7635	.5323	.3323	.2436	.1354		
12	.223	.400	.9312	.7633	.5326	.3845	.2470	.1400		
13	.199	.350	.9327	.7644	.5324	.3845	.2493	.1413		
14	.174	.300	.9323	.7651	.5320	.3870	.2517	.1415		
15	.150	.250	.9310	.7641	.5427	.3897	.2514	.1413		
16	.126	.200	.9306	.7998	.5704	.3925	.2567	.1405		
17	.102	.150	.9231	.7596	.5308	.3895	.2527	.1390		
[b]18	.007	.150	.9208	.7627	.5292	.3777	.2252	.0924		1.1933
19	.026	.201	.9310	.7647	.5314	.3796	.2209	.0845		1.1720
20	.046	.250	.9312	.7545	.5300	.3770	.2144	.0750		1.1461
21	.066	.301	.9310	.7644	.5279	.3726	.2085	.0656		1.1175
22	.087	.350	.9300	.7636	.5251	.3691	.2017	.0560		1.0858
23	.109	.401	.9291	.7516	.5203	.3593	.1895	.0443		1.0377
24	.124	.434	.9248	.7580	.5176	.3562	.1834	.0346		1.0024
25	.136	.460	.9672	.7536	.5144	.3513	.1807	.0322		.9795
26	.156	.500	1.0303	.7436	.5107	.3471	.1795	.0314		.9510
27	.187	.563	.9103	.8255	.5010	.3440	.1786	.0375		.8696
28	.220	.623	.7862	.9653	.4985	.3313	.1641	.0252		.7565
29	.251	.675	.6799	.8028	.6064	.3621	.1827	.0473		.6414
30	.295	.725	.6094	.6790	.8018	.5061	.2748	.1309		.5673
31	.320	.772	.4375	.4932	.7787	.6521	.3849	.2236		.3863
32	.357	.813	.2622	.3079	.5865	.7213	.5138	.3524		.2017
33	.398	.857	.1601	.1914	.3934	.6247	.6365	.4832		.0824
34	.443	.895	-.0521	-.0225	.1591	.4184	.6102	.5673		-.1603
35	.502	.934	-.2478	-.1879	-.0232	.1983	.4556	.5567		-.4440
36	.530	.970	.3054	.3014	.2724	.2965	.3982	.4737		-.7682
37	.624	.984	.3831	.4134	.4829	.5010	.4935	.5125		-.7491
38	.633	.997	.3753	.4089	.5189	.6035	.6556	.6403		-.4552
39	.757	1.000								-.4395
40	.822	.991								-.4253
41	.874	.972	-.2836	-.2861	-.2879	-.2915	-.2798	-.2891		-.4158
42	.933	.934	-.2966	-.3019	-.3053	-.3077	-.2997	-.3078		-.4156
43	.973	.895	-.3035	-.3069	-.3129	-.3147	-.3065	-.3169		-.4203
44	.999	.856	-.3073	-.3095	-.3152	-.3199	-.3129	-.3218		-.4239
45	1.035	.772	-.3092	-.3121	-.3179	-.3201	-.3091	-.3192		-.4238
46	1.047	.675	-.3100	-.3117	-.3148	-.3154	-.3035	-.3053		-.4104
47	1.027	.565	-.3115	-.3093	-.3150	-.3135	-.3007	-.3023		-.4028
48	.955	.425	-.3045	-.3122	-.3062	-.3156	-.3138	-.3131		-.4074
49	.821	.300	-.2898	-.2977	-.2929	-.2985	-.2995	-.2952		-.3825
50	.694	.225	-.2839	-.2893	-.2852	-.2892	-.2897	-.2936		-.3615
51	.013	.175	.9238	.7599	.5277	.3754	.2173	.0797		1.1788
52	.037	.225	.9293	.7637	.5304	.3757	.2167	.0714		1.1592
53	.057	.275	.9300	.7643	.5312	.3755	.2137	.0673		1.1266
54	.078	.325	.9307	.7545	.5321	.3763	.2132	.0614		1.0926
55	.100	.376	.9208	.7531	.5308	.3751	.2107	.0585		1.0602
56	.122	.426	.9299	.7650	.5315	.3730	.2075	.0550		1.0144
57	.222	.627	.7894	.8900	.5033	.3500	.1784	.0235		.7499
58	.323	.775	.4201	.4842	.7099	.5041	.2434	.0806		.3693
59	.505	.947	-.2952	-.2323	-.0536	.1321	.4116	.3566		-.5152
[c]60	.727	1.012	.3725	.4131	.5501	.6549	.7228	.7038		
61	.733	1.032	.4407	.5151	.6587	.7211	.7058	.6689		
62	.741	1.050	.5388	.5549	.5411	.5005	.4512	.4292		
63	.758	1.073	.0096	-.0433	-.1507	-.2034	-.2004	-.1284		
64	.778	1.087	-.5787	-.6006	-.6443	-.6510	-.6203	-.5357		
65	.799	1.093	-.4060	-.4160	-.4132	-.4286	-.4516	-.5279		
66	.833	1.099	-.3200	-.3320	-.3439	-.3566	-.3626	-.3471		
67	.864	1.090	-.3066	-.3120	-.3210	-.3256	-.3195	-.3307		
68	.888	1.070	-.3047	-.3079	-.3152	-.3205	-.3135	-.3184		
69	.900	1.030	-.3022	-.3046	-.3102	-.3124	-.3015	.3076		
70	.890	1.000	-.3006	-.3007	-.3051	-.3055	-.2934	.2967		

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(k) $M_\infty = 1.00$ (test Mach number approached from smaller value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
[a]1	0.000	0.000	1.2765	1.2742	1.2770	1.2754	1.2742	1.2769		
2	.011	.050	1.2500	1.2450	1.2414	1.2345	1.2339	1.2315		
3	.039	.100	1.2229	1.2160	1.2045	1.1968	1.1936	1.1917		
4	.069	.150	1.1990	1.1858	1.1711	1.1594	1.1534	1.1494		
5	.097	.200	1.1757	1.1571	1.1345	1.1206	1.1095	1.1035		
6	.125	.250	1.1486	1.1212	1.0937	1.0732	1.0610	1.0520		
7	.154	.300	1.1212	1.1140	1.0718	1.0215	1.0009	.9869		
8	.183	.350	1.0923	1.0359	1.0009	.9500	.9200	.9014		
9	.212	.400	1.0465	.9577	.8659	.8115	.7613	.7324		
10	.232	.435	.9551	.7917	.6015	.4354	.3787	.3094		
11	.240	.435	.9655	.8039	.5751	.4274	.2881	.1765		
12	.223	.400	.9682	.8061	.5765	.4286	.2913	.1763		
13	.199	.350	.9678	.8043	.5758	.4309	.2923	.1804		
14	.174	.300	.9692	.8061	.5763	.4315	.2947	.1801		
15	.150	.250	.9690	.8050	.5873	.4335	.2976	.1788		
16	.126	.200	.9671	.8381	.6099	.4337	.2995	.1813		
17	.102	.150	.9613	.8011	.5745	.4336	.2995	.1769		
[b]18	.007	.150	.9574	.7996	.5745	.4264	.2710	.1358		1.2222
19	.026	.201	.9676	.8053	.5766	.4251	.2693	.1286		1.2025
20	.046	.250	.9675	.8066	.5732	.4248	.2636	.1212		1.1796
21	.066	.301	.9677	.8047	.5732	.4193	.2560	.1114		1.1316
22	.087	.350	.9689	.8062	.5700	.4172	.2500	.1064		1.1156
23	.109	.401	.9661	.8005	.5652	.4063	.2411	.0934		1.0734
24	.124	.434	.9607	.7997	.5619	.4026	.2344	.0840		1.0306
25	.136	.460	.9576	.7952	.5579	.4023	.2304	.0809		1.0183
26	.156	.500	1.0668	.7837	.5524	.3967	.2274	.0821		.9903
27	.187	.563	.9467	.8542	.5430	.3906	.2271	.0826		.9111
28	.220	.623	.8296	.9581	.5438	.3782	.2164	.0737		.8016
29	.251	.676	.7235	.8464	.6664	.4029	.2296	.0862		.6937
30	.285	.725	.6541	.7211	.8418	.5288	.3070	.1606		.5176
31	.320	.772	.4889	.5431	.8248	.6754	.4004	.2308		.4403
32	.357	.815	.3199	.3633	.6350	.7488	.5424	.3511		.2538
33	.398	.857	.2162	.2482	.4473	.6695	.6636	.5004		.1533
34	.443	.895	.0106	.0376	.2153	.4726	.6578	.5824		-.0829
35	.502	.934	-.2236	-.1853	.0299	.2552	.5076	.5879		-.3460
36	.580	.970	.3606	.3578	.3331	.3556	.4551	.5217		-.6514
37	.624	.984	.4253	.4551	.5345	.5585	.5487	.5492		-.7663
38	.693	.997	.4147	.4431	.5664	.6505	.6861	.6657		-.5797
39	.767	1.000								-.5122
40	.822	.991								-.4872
41	.874	.972	-.3186	-.3174	-.3199	-.3296	-.3349	-.3472		-.4746
42	.933	.934	-.3382	-.3336	-.3376	-.3492	-.3536	-.3683		-.4723
43	.973	.895	-.3414	-.3398	-.3436	-.3557	-.3606	-.3759		-.4749
44	.999	.856	-.3437	-.3426	-.3476	-.3600	-.3653	-.3816		-.4770
45	1.035	.77	-.3459	-.3451	-.3464	-.3595	-.3655	-.3829		-.4759
46	1.047	.675	-.3454	-.3412	-.3441	-.3554	-.3596	-.3680		-.4988
47	1.027	.565	-.3441	-.3360	-.3440	-.3516	-.3509	-.3575		-.4978
48	.955	.425	-.3439	-.3445	-.3376	-.3496	-.3604	-.3708		-.4704
49	.821	.300	-.3279	-.3284	-.3245	.3359	-.3430	-.3523		-.4501
50	.694	.225	-.3190	-.3184	-.3156	.3244	-.3323	-.3331		-.4262
51	.018	.175	.9609	.8004	.5725	.4216	.2649	.1240		1.2104
52	.037	.225	.9680	.8063	.5748	.4254	.2645	.1206		1.1918
53	.057	.275	.9673	.8030	.5752	.4226	.2635	.1157		1.1504
54	.078	.326	.9670	.8049	.5754	.4235	.2606	.1106		1.1279
55	.100	.376	.9686	.8054	.5760	.4222	.2572	.1072		1.0945
56	.122	.426	.9686	.8036	.5750	.4214	.2540	.1055		1.0573
57	.222	.627	.8302	.9372	.5524	.3748	.2266	.0714		.7979
58	.323	.775	.4737	.5349	.7491	.5527	.3095	.1243		.4327
59	.505	.937	-.2890	-.2132	.0035	.2479	.4687	.4143		-.4166
[c]60	.727	1.012	.4131	.4566	.5956	.7020	.7617	.7220		
61	.733	1.032	.4791	.5561	.7039	.7676	.7449	.6832		
62	.741	1.050	.5759	.5997	.5995	.5599	.5008	.4790		
63	.758	1.073	.1004	.0438	-.0617	-.1174	-.1076	-.0314		
64	.778	1.087	-.4653	-.4907	-.5399	-.5511	-.5140	-.4162		
65	.799	1.095	-.4673	-.4640	-.4553	-.4636	-.5010	-.5980		
66	.833	1.099	-.3604	-.3623	-.3721	-.3907	-.4032	-.4373		
67	.864	1.090	-.3425	-.3422	-.3477	-.3609	-.3682	-.3855		
68	.888	1.070	-.3393	-.3389	-.3437	-.3572	-.3612	-.3737		
69	.900	1.030	-.3377	-.3357	-.3374	-.3500	-.3543	-.3650		
70	.890	1.000	-.3354	-.3295	-.3314	-.3443	-.3479	-.3573		

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(l) $M_\infty = 0.80$ (test Mach number approached from larger value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p: Afterbody with fence and cone forebody for δ/d_c – 0.00	0.11	0.34	0.57	0.91	1.36	∞	Afterbody without fence
[a]1	0.000	0.000	1.1719	1.1703	1.1717	1.1693	1.1684	1.1710		
2	.011	.050	1.1402	1.1360	1.1306	1.1269	1.1240	1.1231		
3	.039	.100	1.1122	1.1050	1.0937	1.0845	1.0795	1.0784		
4	.068	.150	1.0869	1.0737	1.0542	1.0451	1.0396	1.0329		
5	.097	.200	1.0602	1.0389	1.0169	1.0039	.9902	.9873		
6	.125	.250	1.0318	1.0026	.9733	.9543	.9378	.9282		
7	.154	.300	1.0035	.9706	.9182	.8943	.8738	.8583		
8	.183	.350	.9685	.9060	.8463	.8182	.7887	.7663		
9	.212	.400	.9165	.8255	.7215	.6663	.6186	.5858		
10	.232	.435	.8208	.6445	.4403	.3253	.2233	.1478		
11	.240	.435	.8301	.6583	.4143	.2685	.1446	.0603		
12	.223	.400	.8319	.6556	.4143	.2695	.1476	.0660		
13	.199	.350	.8316	.6559	.4155	.2724	.1513	.0695		
14	.174	.300	.8345	.6589	.4181	.2783	.1546	.0684		
15	.150	.250	.8321	.6574	.3988	.2801	.1599	.0654		
16	.126	.200	.8322	.6581	.3550	.2845	.1622	.0683		
17	.102	.150	.8250	.6530	.4169	.2808	.1584	.0667		
[b]18	.007	.150	.8234	.6530	.4150	.2668	.1233	.0054	1.1161	1.1117
19	.026	.201	.8304	.6570	.4157	.2658	.1156	-.0089	1.0933	1.0888
20	.046	.250	.8319	.6574	.4141	.2585	.1041	-.0258	1.0676	1.0614
21	.066	.301	.8321	.6570	.4111	.2543	.0962	-.0396	1.0379	1.0282
22	.087	.350	.8313	.6549	.4067	.2500	.0883	-.0416	1.0050	.9934
23	.109	.401	.8304	.6524	.4019	.2389	.0768	-.0628	.9579	.9401
24	.124	.434	.8285	.6478	.3956	.2355	.0718	-.0724	.9215	.9005
25	.136	.460	.8702	.6436	.3917	.2323	.0666	-.0710	.9018	.8758
26	.156	.500	.9359	.6317	.3860	.2289	.0635	-.0610	.8679	.8426
27	.187	.563	.8071	.7256	.3794	.2264	.0668	-.0490	.7871	.7552
28	.220	.623	.6779	.8713	.3822	.2125	.0521	-.0484	.6698	.6238
29	.251	.676	.5609	.6900	.5353	.2537	.0822	.0114	.5582	.5000
30	.285	.725	.4820	.5573	.7345	.4383	.1982	.1457	.4805	.4105
31	.320	.772	.3012	.3631	.6773	.6194	.3382	.2600	.3079	.2098
32	.357	.815	.1172	.1672	.4504	.6420	.4998	.4276	.1282	-.0006
33	.398	.857	.0138	.0496	.2527	.5038	.5818	.5415	.0222	-.1433
34	.443	.895	-.1891	-.1577	.0149	.2654	.5014	.5689	-.1748	-.4152
35	.502	.934	-.3003	-.2735	-.1515	.0424	.3005	.4401	-.2279	-.7566
36	.580	.970	.1238	.1138	.0959	.1333	.2372	.3369	.2841	-.8503
37	.624	.984	.2754	.2965	.3503	.3590	.3607	.4044	.2757	-.5736
38	.693	.997	.2693	.3015	.4044	.4821	.5442	.5940	.3009	-.5406
39	.767	1.000								-.5283
40	.822	.991								-.5010
41	.874	.972	-.2995	-.3010	-.2923	-.2925	-.2892	-.2967	-.3079	-.4843
42	.933	.934	-.3198	-.3133	-.3076	-.3100	-.3092	-.3170	-.3212	-.4700
43	.973	.895	-.3216	-.3188	-.3143	-.3149	-.3155	-.3270	-.3277	-.4643
44	.999	.856	-.3207	-.3212	-.3168	-.3195	-.3199	-.3381	-.3265	-.4625
45	1.035	.772	-.3207	-.3227	-.3152	-.3185	-.3198	-.3363	-.3293	-.4558
46	1.047	.675	-.3217	-.3235	-.3064	-.3138	-.3136	-.3199	-.3259	-.4386
47	1.027	.565	-.3180	-.3196	-.3111	-.3134	-.3134	-.3142	-.3210	-.4226
48	.955	.425	-.3201	-.3190	-.3165	-.3101	-.3116	-.3262	-.3230	-.4113
49	.821	.300	-.3052	-.3021	-.3008	-.2925	-.2929	-.3053	-.3027	-.3842
50	.694	.225	-.2946	-.2914	-.2947	-.2897	-.2844	-.2866	-.2923	-.3546
51	.018	.175	.8263	.6549	.4134	.2589	.1094	-.0174	1.1021	1.0962
52	.037	.225	.8311	.6554	.4132	.2601	.1031	-.0252	1.0819	1.0756
53	.057	.275	.8320	.6558	.4147	.2599	.1024	-.0370	1.0498	1.0392
54	.078	.326	.8346	.6559	.4129	.2608	.1020	-.0481	1.0150	1.0019
55	.100	.376	.8322	.6570	.4144	.2513	.0961	-.0579	.9812	.9671
56	.122	.426	.8319	.6579	.4133	.2578	.0924	-.0582	.9376	.9145
57	.222	.627	.6776	.7959	.3907	.2332	.0658	-.0802	.6652	.6221
58	.323	.775	.2873	.3565	.5856	.4160	.1555	.0174	.2832	.1926
59	.505	.937	-.3494	-.3266	-.1916	.0303	.2605	.2364	-.2727	-.8488
[c]60	.727	1.012	.2666	.3064	.4401	.5417	.6148	.6707	.2675	
61	.733	1.032	.3486	.4222	.5566	.6112	.6063	.6303	.1791	
62	.741	1.050	.4124	.4162	.3788	.3311	.2906	.2973	.0123	
63	.758	1.073	-.3215	-.3691	-.4692	-.5126	-.5018	-.4467	-.4489	
64	.778	1.087	-.9869	-.9902	-.9938	-.9783	-.9516	-.9017	-.8248	
65	.799	1.095	-.4335	-.4532	-.4749	-.5009	-.5442	-.6227	-.6396	
66	.833	1.099	-.3488	-.3548	-.3653	-.3832	-.4002	-.4240	-.3686	
67	.864	1.090	-.3232	-.3243	-.3258	-.3318	-.3337	-.3483	-.3131	
68	.888	1.070	-.3159	-.3184	-.3169	-.3213	-.3223	-.3368	-.3198	
69	.900	1.030	-.3111	-.3129	-.3050	-.3088	-.3104	-.3229	-.3190	
70	.890	1.000	-.3073	-.3102	-.2935	-.2977	-.3009	-.3074	-.3126	

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(m) $M_\infty = 0.60$ (test Mach number approached from larger value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
[a]1	0.000	0.000	1.0924	1.0936	1.0931	1.0905	1.0933	1.0935		
2	.011	.050	1.0617	1.0560	1.0499	1.0468	1.0444	1.0429		
3	.039	.100	1.0310	1.0234	1.0097	1.0044	.9986	.9967		
4	.068	.150	1.0036	.9905	.9715	.9625	.9532	.9503		
5	.097	.200	.9762	.9535	.9295	.9174	.9082	.8976		
6	.125	.250	.9462	.9152	.8854	.8657	.8514	.8408		
7	.154	.300	.9155	.8209	.7780	.8046	.7831	.7673		
8	.183	.350	.8796	.8027	.7436	.7231	.6964	.6784		
9	.212	.400	.8243	.7257	.6232	.5675	.5202	.4941		
10	.232	.435	.7259	.5391	.3315	.2267	.1354	.0739		
11	.240	.435	.7322	.5497	.3106	.1719	.0767	.0030		
12	.223	.400	.7326	.5484	.3114	.1728	.0835	-.0053		
13	.199	.350	.7361	.5505	.3120	.1758	.0887	.0108		
14	.174	.300	.7352	.5503	.3126	.1817	.0925	.0217		
15	.150	.250	.7339	.5500	.2902	.1854	.0953	.0257		
16	.126	.200	.7315	.5502	.2806	.1914	.0997	.0315		
17	.102	.150	.7279	.5463	.3151	.1883	.0955	.0311		
[b]18	.007	.150	.7229	.5481	.3093	.1701	.0422	-.0419	1.0337	1.0264
19	.026	.201	.7317	.5490	.3085	.1666	.0326	-.0636	1.0108	1.0023
20	.046	.250	.7325	.5513	.3061	.1590	.0215	-.0915	.9823	.9693
21	.066	.301	.7333	.5516	.3011	.1522	.0083	-.1061	.9489	.9325
22	.087	.350	.7333	.5485	.3005	.1450	.0031	-.1081	.9124	.8922
23	.109	.401	.7315	.5435	.2915	.1354	-.0187	-.1260	.8641	.8353
24	.124	.434	.7291	.5401	.2882	.1323	-.0309	-.1406	.8246	.7905
25	.136	.460	.7716	.5327	.2872	.1253	-.0318	-.1405	.7999	.7655
26	.156	.500	.3395	.5206	.2720	.1186	-.0300	-.1050	.7632	.7198
27	.187	.563	.7019	.6419	.2748	.1219	-.0137	-.0657	.6777	.6157
28	.220	.623	.5649	.7704	.2897	.1140	-.0128	-.0215	.5545	.4735
29	.251	.676	.4373	.5708	.4750	.1842	.0593	.0003	.4339	.3266
30	.285	.725	.3593	.4318	.6641	.3812	.2213	.2011	.3529	.2209
31	.320	.772	.1704	.2263	.5521	.5573	.4042	.3807	.1690	-.0162
32	.357	.815	-.0154	.0274	.3005	.5280	.5214	.5162	-.0155	-.2650
33	.398	.857	-.1175	-.0856	.1044	.3503	.5132	.5456	-.1130	-.4393
34	.443	.895	-.2973	-.2766	-.1243	.0958	.3511	.4341	-.2950	-.7707
35	.502	.934	-.4111	-.3865	-.2841	-.1251	.1010	.2273	-.3818	-1.1929
36	.580	.970	-.1157	-.1209	-.1081	-.0588	.0402	.1245	.0578	-1.5053
37	.624	.984	.1635	.1715	.1752	.1666	.1874	.2165	.1816	-1.2813
38	.693	.997	.1848	.2098	.2887	.3562	.4148	.4620	.2069	-.5538
39	.767	1.000								-.4689
40	.822	.991								-.4875
41	.874	.972	-.3197	-.3143	-.3130	-.3147	-.3121	-.3121	-.3233	-.5021
42	.933	.934	-.3356	-.3258	-.3282	-.3267	-.3274	-.3295	-.3373	-.5028
43	.973	.895	-.3376	-.3334	-.3367	-.3340	-.3334	-.3465	-.3432	-.5008
44	.999	.856	-.3450	-.3427	-.3381	-.3406	-.3363	-.3558	-.3455	-.5039
45	1.035	.772	-.3487	-.3483	-.3383	-.3371	-.3402	-.3521	-.3518	-.5028
46	1.047	.675	-.3488	-.3465	-.3359	-.3390	-.3383	-.3440	-.3515	-.4802
47	1.027	.565	-.3397	-.3414	-.3384	-.3383	-.3284	-.3282	-.3499	-.4413
48	.955	.425	-.3358	-.3357	-.3342	-.3229	-.3206	-.3437	-.3367	-.4156
49	.821	.300	-.3158	-.3190	-.3129	-.3069	-.2962	-.3178	-.3162	-.3867
50	.694	.225	-.3073	-.3009	-.3020	-.2997	-.2819	-.2956	-.3011	-.3592
51	.018	.175	.7275	.5484	.3046	.1575	.0262	-.0774	1.0192	1.0114
52	.037	.225	.7330	.5500	.3078	.1591	.0226	-.0951	.9974	.9870
53	.057	.275	.7338	.5484	.3093	.1575	.0125	-.1132	.9611	.9470
54	.078	.326	.7352	.5492	.3110	.1590	.0031	-.1353	.9289	.9003
55	.100	.376	.7340	.5485	.3088	.1570	-.0005	-.1446	.8929	.8613
56	.122	.426	.7321	.5481	.3066	.1531	-.0085	-.1451	.8391	.8055
57	.222	.627	.5697	.7007	.2859	.1255	-.0235	-.1110	.5545	.4635
58	.323	.775	.1553	.2173	.4832	.3637	.1414	.1427	.1511	-.0470
59	.505	.937	-.4588	-.4462	-.3267	-.1482	.0879	.1441	-.4265	-1.3667
[c]60	.727	1.012	.1848	.2193	.3353	.4234	.5130	.5590	.1926	
61	.733	1.032	.2959	.3487	.4428	.4703	.4802	.4899	.0886	
62	.741	1.050	.2260	.1944	.1192	.0739	.0347	.0444	-.1483	
63	.758	1.073	-.9078	-.9418	-1.0061	-1.0180	-.9852	-.9388	-.8619	
64	.778	1.087	-1.4620	-1.4836	-1.5256	-1.5300	-1.5130	-1.4734	-1.2676	
65	.799	1.095	-.4687	-.5090	-.5742	-.6504	-.8330	-1.0199	-.9628	
66	.833	1.099	-.3790	-.3946	-.4245	-.4415	-.4668	-.4870	-.4375	
67	.864	1.090	-.3491	-.3495	-.3593	-.3582	-.3543	-.3641	-.3531	
68	.838	1.070	-.3404	-.3403	-.3357	-.3377	-.3290	-.3418	-.3368	
69	.900	1.030	-.3361	-.3349	-.3251	-.3206	-.3210	-.3291	-.3364	
70	.890	1.000	-.3320	-.3300	-.3193	-.3199	-.3217	-.3259	-.3369	

[a]Orifices 1 to 17 on cone.
[b]Orifices 18 to 59 on afterbody.
[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Continued

(n) $M_\infty = 0.40$ (test Mach number approached from larger value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p: Afterbody with fence and cone forebody for δ/d_c – 0.00	0.11	0.34	0.57	0.91	1.36	∞	Afterbody without fence
1[a]	0.000	0.000	1.0385	1.0397	1.0400	1.0416	1.0385	1.0405		
2	.011	.050	1.0099	.9992	.9965	.9968	.9912	.9870		
3	.039	.100	.9813	.9640	.9559	.9509	.9435	.9439		
4	.068	.150	.9517	.9334	.9163	.9068	.8996	.8973		
5	.097	.200	.9201	.8971	.8726	.8602	.8528	.8464		
6	.125	.250	.8916	.8583	.8258	.8085	.7955	.7912		
7	.154	.300	.8598	.6892	.6518	.7451	.7297	.7250		
8	.183	.350	.8226	.7561	.6675	.6657	.6401	.6259		
9	.212	.400	.7663	.6681	.5640	.5108	.4700	.4429		
10	.232	.435	.6672	.4880	.2825	.1743	.0981	.0351		
11	.240	.435	.6690	.4881	.2565	.1278	.0367	-.0107		
12	.223	.400	.6709	.4861	.2568	.1289	.0409	-.0130		
13	.199	.350	.6712	.4872	.2599	.1343	.0508	-.0023		
14	.174	.300	.6712	.4908	.2602	.1425	.0579	.0059		
15	.150	.250	.6690	.4888	.2101	.1429	.0654	.0147		
16	.126	.200	.6680	.4902	.2096	.1501	.0738	.0252		
17	.102	.150	.6639	.4805	.2610	.1487	.0693	.0170		
18[b]	.007	.150	.6614	.4917	.2573	.1277	.0016	-.0695	.9799	.9662
19	.026	.201	.6714	.4918	.2579	.1235	-.0053	-.0878	.9537	.9399
20	.046	.250	.6742	.4892	.2556	.1166	-.0177	-.1153	.9237	.9038
21	.066	.301	.6769	.4917	.2528	.1071	-.0263	-.1311	.8893	.8632
22	.087	.350	.6734	.4912	.2460	.0991	-.0344	-.1137	.8529	.8182
23	.109	.401	.6769	.4884	.2415	.0938	-.0575	-.1425	.7998	.7626
24	.124	.434	.6750	.4811	.2337	.0820	-.0660	-.1634	.7672	.7170
25	.136	.460	.6971	.4715	.2275	.0832	-.0675	-.1415	.7361	.6837
26	.156	.500	.7786	.4616	.2204	.0754	-.0659	-.0883	.6942	.6345
27	.187	.563	.6309	.5885	.2149	.0762	-.0446	.0366	.6012	.5198
28	.220	.623	.4973	.6874	.2348	.0711	-.0456	.0225	.4812	.3771
29	.251	.676	.3653	.5003	.4332	.1511	.0188	.1016	.3637	.2212
30	.285	.725	.2762	.3577	.6021	.3693	.1687	.3222	.2635	.0917
31	.320	.772	.0912	.1586	.4576	.4987	.3057	.4575	.0932	-.1510
32	.357	.815	-.0890	-.0343	.2156	.4385	.4305	.5471	-.0883	-.4208
33	.398	.857	-.1896	-.1402	.0242	.2578	.4109	.4838	-.2251	-.5625
34	.443	.895	-.3532	-.3248	-.1917	.0114	.2436	.3253	-.3846	-1.0022
35	.502	.934	-.4444	-.4313	-.3491	-.2003	-.0130	.0713	-.5049	-1.4440
36	.580	.970	-.2199	-.2298	-.2147	-.1664	-.0684	-.0156	-.3791	-1.8205
37	.624	.984	.0952	.0799	.0532	.0465	.0695	.0983	-.0021	-1.9782
38	.693	.997	.1834	.1883	.2428	.2914	.3188	.3531	.4847	-2.1937
39	.767	1.000								-2.2205
40	.822	.991								-2.3120
41	.874	.972	-.3074	-.3276	-.3322	-.3285	-.3186	-.3160	-.3234	-1.6428
42	.933	.934	-.3495	-.3430	-.3497	-.3402	-.3327	-.3347	-.3340	-.6791
43	.973	.895	-.3413	-.3469	-.3483	-.3373	-.3410	-.3460	-.3482	-.4191
44	.999	.856	-.3565	-.3439	-.3541	-.3468	-.3458	-.3701	-.3584	-.3988
45	1.035	.772	-.3548	-.3535	-.3608	-.3491	-.3523	-.3693	-.3667	-.3914
46	1.047	.675	-.3547	-.3581	-.3588	-.3486	-.3491	-.3630	-.3627	-.4142
47	1.027	.565	-.3549	-.3487	-.3619	-.3438	-.3295	-.3590	-.3568	-.4349
48	.955	.425	-.3481	-.3380	-.3411	-.3341	-.3400	-.3379	-.3485	-.4696
49	.821	.300	-.3228	-.3219	-.3154	-.3115	-.3167	-.3072	-.3322	-.4483
50	.694	.225	-.3099	-.3103	-.3051	-.3043	-.2990	-.2908	-.3190	-.4286
51	.018	.175	.6712	.4907	.2571	.1150	-.0003	-.0878	.9629	.9468
52	.037	.225	.6744	.4927	.2553	.1146	-.0085	-.1069	.9401	.9188
53	.057	.275	.6796	.4941	.2550	.1116	-.0210	-.1220	.9038	.8782
54	.078	.326	.6810	.4900	.2504	.1064	-.0296	-.1390	.8647	.8309
55	.100	.375	.6758	.4887	.2492	.1000	-.0370	-.1628	.8307	.7895
56	.122	.425	.6748	.4886	.2495	.0946	-.0447	-.1555	.7797	.7310
57	.222	.627	.5022	.6696	.2229	.0702	-.0644	-.1448	.4861	.3667
58	.322	.775	.0905	.1572	.4496	.4427	.2174	.2029	.0728	-.2056
59	.505	.937	-.4876	-.4661	-.3748	-.2229	-.0084	.0325	-.5203	-1.5517
60[c]	.727	1.012	.1770	.1992	.2968	.3700	.4434	.4619	.5068	
61	.733	1.032	.3008	.3242	.3727	.3715	.3767	.3845	.3903	
62	.741	1.050	.0958	.0372	-.0611	-.1140	-.1587	-.1459	-.2051	
63	.758	1.073	-1.0484	-1.1192	-1.2147	-1.2458	-1.2201	-1.1324	-1.3549	
64	.778	1.087	-1.3278	-1.4083	-1.5444	-1.6068	-1.6273	-1.5808	-1.5033	
65	.799	1.095	-.5925	-.7113	-.9855	-1.3045	-1.5191	-1.5752	-.5829	
66	.833	1.099	-.3809	-.4188	-.4634	-.4847	-.4990	-.5338	-.4550	
67	.864	1.090	-.3574	-.3665	-.3721	-.3593	-.3589	-.3639	-.3972	
68	.888	1.070	-.3544	-.3408	-.3519	-.3437	-.3402	-.3615	-.3706	
69	.900	1.030	-.3418	-.3338	-.3420	-.3293	-.3323	-.3415	-.3580	
70	.890	1.000	-.3375	-.3392	-.3390	-.3263	-.3274	-.3335	-.3506	

[a]Orifices 1 to 17 on cone.
[b]Orifices 18 to 59 on afterbody.
[c]Orifices 60 to 70 on burble fence.

TABLE I.- MODEL COORDINATES AND SURFACE PRESSURE COEFFICIENTS – Concluded

(o) $M_\infty = 0.20$ (test Mach number approached from larger value)

Orifice	$\frac{x_a, x_c}{r_b}$	$\frac{r}{r_b}$	C_p							
			Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
			0.00	0.11	0.34	0.57	0.91	1.36	∞	
a1	0.000	0.000	1.0052	.9980	1.0053	1.0101	1.0072	1.0101		
2	.011	.050	.9792	.9748	.9632	.9561	.9662	.9639		
3	.039	.100	.9485	.9288	.9233	.9164	.9069	.9143		
4	.068	.150	.9192	.8924	.8835	.8809	.8720	.8731		
5	.097	.200	.8882	.8556	.8413	.8323	.9216	.8223		
6	.125	.250	.8552	.8229	.8001	.7799	.7618	.7601		
7	.154	.300	.8265	.2863	.4369	.7203	.7034	.6887		
8	.183	.350	.7908	.7165	.5216	.6326	.6016	.5832		
9	.212	.400	.7384	.6308	.5359	.4834	.4551	.4205		
10	.232	.435	.6447	.4582	.2809	.1715	.0968	.0737		
11	.240	.435	.6385	.4519	.2353	.1089	.0337	-.0305		
12	.223	.400	.6381	.4523	.2401	.1089	.0297	-.0203		
13	.199	.350	.6428	.4647	.2404	.1093	.0382	-.0016		
14	.174	.300	.6395	.4531	.2334	.1155	.0576	.0075		
15	.150	.250	.6457	.4564	.1040	.1288	.0609	-.0024		
16	.126	.200	.6391	.4535	.0821	.1440	.0671	.0107		
17	.102	.150	.6319	.4535	.2440	.1317	.0689	-.0024		
b18	.007	.150	.6323	.4619	.2304	.1087	-.0090	-.0683	.9359	.9265
19	.026	.201	.6418	.4751	.2285	.1045	-.0127	-.0868	.9141	.9038
20	.046	.250	.6436	.4592	.2224	.0953	-.0441	-.1088	.8793	.8709
21	.066	.301	.6410	.4623	.2224	.1026	-.0425	-.1163	.8558	.8357
22	.087	.350	.6363	.4588	.2236	.0923	-.0620	-.1213	.8190	.7853
23	.109	.401	.6333	.4592	.2199	.0797	-.0807	-.1213	.7670	.7240
24	.124	.434	.6345	.4500	.2192	.0735	-.0825	-.1053	.7269	.6902
25	.136	.460	.6445	.4374	.2141	.0720	-.0892	-.0643	.6963	.6503
26	.156	.500	.7393	.4317	.1970	.0689	-.0736	-.0207	.6651	.5920
27	.187	.563	.5915	.5445	.2008	.0532	-.0765	-.0238	.5743	.4753
28	.220	.623	.4578	.6581	.2235	.0536	-.0607	.0647	.4489	.3276
29	.251	.676	.3386	.4688	.4419	.1271	-.0036	.1709	.3384	.1623
30	.285	.725	.2427	.3343	.5833	.2796	.1954	.3955	.2391	.0303
31	.320	.772	.0659	.1268	.4327	.4700	.3788	.4894	.0723	-.1983
32	.357	.815	-.1020	-.0567	.1904	.4088	.4549	.4894	-.1255	-.4864
33	.398	.857	-.2147	-.1879	-.0144	.2214	.3845	.3503	-.2660	-.7156
34	.443	.895	-.3709	-.3440	-.2043	-.0202	.1936	.1871	-.4235	-1.0342
35	.502	.934	-.4715	-.4622	-.3695	-.2403	-.0386	-.0064	-.5303	-1.4645
36	.580	.970	-.2799	-.2701	-.2603	.2043	-.1121	-.0774	-.3927	-1.7960
37	.624	.984	.0221	.0203	-.0089	-.0107	.0191	.0420	-.0839	-1.9041
38	.693	.997	.1832	.1872	.2417	.2676	.3093	.2159	.4271	-2.0826
39	.767	1.000								-2.0968
40	.822	.991								-2.1735
41	.874	.972	-.3386	-.3229	-.3195	-.3334	-.3469	-.3032	-.3281	-2.0256
42	.933	.934	-.5272	-.3433	-.4728	-.3413	-.3341	-.3449	-.3488	-.7923
43	.973	.895	-.3663	-.3397	-.3471	-.3448	-.3542	-.3737	-.3434	-.4393
44	.999	.856	-.3728	-.3485	-.3502	-.3448	-.3499	-.3581	-.3467	-.4001
45	1.035	.772	-.3858	-.3608	-.3624	-.3536	-.3529	-.3866	-.3733	-.3964
46	1.047	.675	-.3900	-.3651	-.3277	-.3505	-.3545	-.3521	-.3706	-.3929
47	1.027	.565	-.3752	-.3608	-.3379	-.3358	-.3362	-.3261	-.3550	-.4056
48	.955	.425	-.3574	-.3263	-.3637	-.3280	-.3433	-.3611	-.3480	-.4056
49	.921	.300	-.3136	-.3069	-.3438	-.3012	-.3131	-.3092	-.3297	-.3569
50	.694	.225	-.2993	-.3135	-.3407	-.2950	-.3138	-.2823	-.3215	-.3249
51	.018	.175	.6299	.4544	.2139	.1107	-.0213	-.0750	.9319	.9242
52	.037	.225	.6283	.4509	.2182	.1033	-.0255	-.0935	.9071	.8887
53	.057	.275	.6222	.4575	.2237	.0967	-.0414	-.1199	.8760	.8482
54	.078	.326	.6264	.4544	.2229	.0967	-.0464	-.1468	.8321	.7983
55	.100	.376	.6365	.4478	.2147	.0921	-.0685	-.1817	.7948	.7577
56	.122	.426	.6368	.4482	.2190	.0921	-.0530	-.1806	.7516	.6954
57	.222	.627	.4650	.6344	.2198	.0574	-.0836	.0406	.4563	.3273
58	.323	.775	.0629	.1280	.4235	.4467	.2883	.3209	.0616	-.2376
59	.505	.937	-.5009	-.4748	-.3859	-.2626	-.0437	-.0166	-.5201	-1.5472
c60	.727	1.012	.1895	.2138	.2965	.3589	.4094	.3916	.4839	
61	.733	1.032	.2704	.3160	.3245	.3098	.2952	.3286	.2726	
62	.741	1.050	-.0520	-.0986	-.1811	-.2164	-.2303	-.2320	-.3491	
63	.758	1.073	-1.2064	-1.2727	-1.3091	-1.3244	-1.2790	-1.0964	-1.5455	
64	.778	1.087	-1.5234	-1.6186	-1.7048	-1.7343	-1.6772	-1.6033	-1.9352	
65	.799	1.095	-1.0745	-1.3570	-1.5895	-1.7137	-1.7669	-1.7577	-1.7692	
66	.833	1.099	-.4115	-.4293	-.4771	-.5302	-.6026	-.6606	-.5003	
67	.864	1.090	-.3752	-.3512	-.3618	-.3532	-.3564	-.3918	-.3643	
68	.888	1.070	-.3663	-.3384	-.3400	-.3315	-.3336	-.3392	-.3336	
69	.900	1.030	-.3701	-.3384	-.3306	-.3311	-.3243	-.3465	-.3542	
70	.890	1.000	-.3651	-.3458	-.3112	-.3186	-.3289	-.3054	-.3452	

[a]Orifices 1 to 17 on cone.

[b]Orifices 18 to 59 on afterbody.

[c]Orifices 60 to 70 on burble fence.

TABLE II.- RAM-PRESSURE ORIFICE COORDINATES AND PRESSURES

M_∞	Orifice	$\frac{x_a}{r_b}$	$\frac{r}{r_b}$	p_r/p_t							
				Afterbody with fence and cone forebody for δ/d_c –							Afterbody without fence
				0.00	0.11	0.34	0.57	0.91	1.36	∞	
0.20	71	0.129	0.505	1.000	0.984	0.977	0.973	0.968	0.959	1.000	1.000
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.999	.984	.976	.973	.980	1.000	1.000
	74	.322	.812	1.000	.999	.995	.987	.980	.988	1.000	1.000
	75	.442	.926	1.000	1.000	.998	.998	.989	.991	1.000	1.000
	76	.730	1.025	----	----	----	----	----	----	----	----
0.30	71	0.129	0.505	1.000	0.982	0.951	0.941	0.931	0.917	1.000	1.000
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	0.998	0.966	0.947	0.938	0.950	1.000	1.000
	74	.322	.812	1.000	.999	.991	.971	.960	.971	1.000	1.000
	75	.442	.926	1.000	1.000	.996	.991	.979	.978	1.000	1.000
	76	.730	1.025	----	----	----	----	----	----	----	----
0.40	71	0.129	0.505	0.999	0.942	0.918	0.900	0.882	0.862	1.000	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.997	.944	.907	.895	.923	1.000	1.000
	74	.322	.812	1.000	.998	.983	.954	.930	.932	1.000	.999
	75	.442	.926	1.000	.999	.992	.977	.960	.945	1.000	1.000
	76	.730	1.025	----	----	----	----	----	----	----	----
0.50	71	0.129	0.505	0.999	0.936	0.878	0.851	0.826	0.797	0.999	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.996	.918	.862	.840	.849	1.000	1.000
	74	.322	.812	1.000	.997	.976	.918	.887	.889	.999	.999
	75	.442	.926	1.000	.998	.986	.966	.940	.918	1.000	.999
	76	.730	1.025	----	----	----	----	----	----	----	----
0.60	71	0.129	0.505	0.999	0.888	0.838	0.803	0.767	0.728	0.999	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.995	.889	.814	.780	.792	1.000	1.000
	74	.322	.812	.999	.997	.964	.896	.832	.831	.999	.999
	75	.442	.926	.999	.998	.980	.951	.907	.862	.999	.999
	76	.730	1.025	----	----	----	----	----	----	----	----
0.70	71	0.129	0.505	0.999	0.864	0.800	0.755	0.709	0.663	0.999	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.994	.848	.767	.721	.720	1.000	1.000
	74	.322	.812	.999	.995	.955	.864	.787	.755	.999	.999
	75	.442	.926	.999	.997	.976	.939	.878	.818	.999	.999
	76	.730	1.025	----	----	----	----	----	----	----	----
0.80	71	0.129	0.505	0.999	0.843	0.771	0.718	0.663	0.612	1.000	0.998
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.992	.817	.722	.663	.633	1.000	1.000
	74	.322	.812	.999	.994	.944	.829	.738	.694	1.000	1.000
	75	.442	.926	1.000	.997	.969	.933	.857	.777	1.000	.999
	76	.730	1.025	----	----	----	----	----	----	----	----

TABLE II.- RAM-PRESSURE ORIFICE COORDINATES AND PRESSURES – Concluded

M_∞	Orifice	$\frac{x_a}{r_b}$	$\frac{r}{r_b}$	p_r/p_t: Afterbody with fence and cone forebody for δ/d_c – 0.00	0.11	0.34	0.57	0.91	1.36	∞	Afterbody without fence
0.85	71	0.129	0.505	0.999	0.837	0.758	0.701	0.642	0.584	1.000	0.998
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.992	.803	.702	.639	.602	1.000	1.000
	74	.322	.812	.999	.994	.945	.814	.710	.665	.999	.999
	75	.442	.926	.999	.996	.968	.926	.840	.742	.999	.999
	76	.730	1.025	----	----	----	----	----	----	----	----
0.90	71	0.129	0.505	0.999	0.829	0.748	0.688	0.626	0.564	0.999	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.991	.789	.687	.621	.576	1.000	1.000
	74	.322	.812	.999	.994	.940	.804	.696	.635	1.000	.999
	75	.442	.926	1.000	.996	.968	.922	.833	.733	1.000	.999
	76	.730	1.025	----	----	----	----	----	----	----	----
0.95	71	0.129	0.505	1.000	0.824	0.739	0.680	0.612	0.551	----	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.991	.780	.675	.605	.556	----	1.000
	74	.322	.812	1.000	.993	.936	.795	.674	.608	----	1.000
	75	.442	.926	.999	.996	.964	.919	.824	.713	----	1.000
	76	.730	1.025	----	----	----	----	----	----	----	----
1.00	71	0.129	0.505	0.999	0.820	0.734	0.673	0.603	0.539	----	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.991	.773	.666	.596	.542	----	1.000
	74	.322	.812	1.000	.994	.932	.785	.662	.591	----	1.000
	75	.442	.926	1.000	.996	.963	.920	.810	.697	----	1.000
	76	.730	1.025	----	----	----	----	----	----	----	----
0.80	71	0.129	0.505	0.998	0.843	0.769	0.717	0.662	0.608	1.000	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.992	.816	.722	.666	.635	1.000	1.000
	74	.322	.812	1.000	.995	.947	.826	.728	.691	1.000	1.000
	75	.442	.926	.999	.997	.971	.929	.852	.766	.999	1.000
	76	.730	1.025	----	----	----	----	----	----	----	----
0.60	71	0.129	0.505	0.999	0.888	0.838	0.801	0.766	0.730	0.999	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.995	.882	.815	.781	.785	1.000	1.000
	74	.322	.812	.999	.996	.963	.893	.844	.820	1.000	.999
	75	.442	.926	1.000	.998	.979	.954	.913	.863	1.000	1.000
	76	.730	1.025	----	----	----	----	----	----	----	----
0.40	71	0.129	0.505	1.000	0.942	0.917	0.899	0.882	0.861	1.000	0.999
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.997	.943	.908	.892	.913	1.000	1.000
	74	.322	.812	.999	.998	.980	.946	.917	.917	1.000	1.000
	75	.442	.926	1.000	.999	.991	.978	.962	.926	1.000	.999
	76	.730	1.025	----	----	----	----	----	----	----	----
0.20	71	0.129	0.505	1.000	0.977	0.978	0.973	0.968	0.964	1.000	1.000
	72	.183	.608	----	----	----	----	----	----	----	----
	73	.245	.714	1.000	.999	.984	.976	.972	.979	1.000	1.000
	74	.322	.812	1.000	.999	.996	.988	.981	.981	1.000	1.000
	75	.442	.926	1.000	1.000	.998	.995	.992	.982	1.000	1.000
	76	.730	1.025	----	----	----	----	----	----	----	----

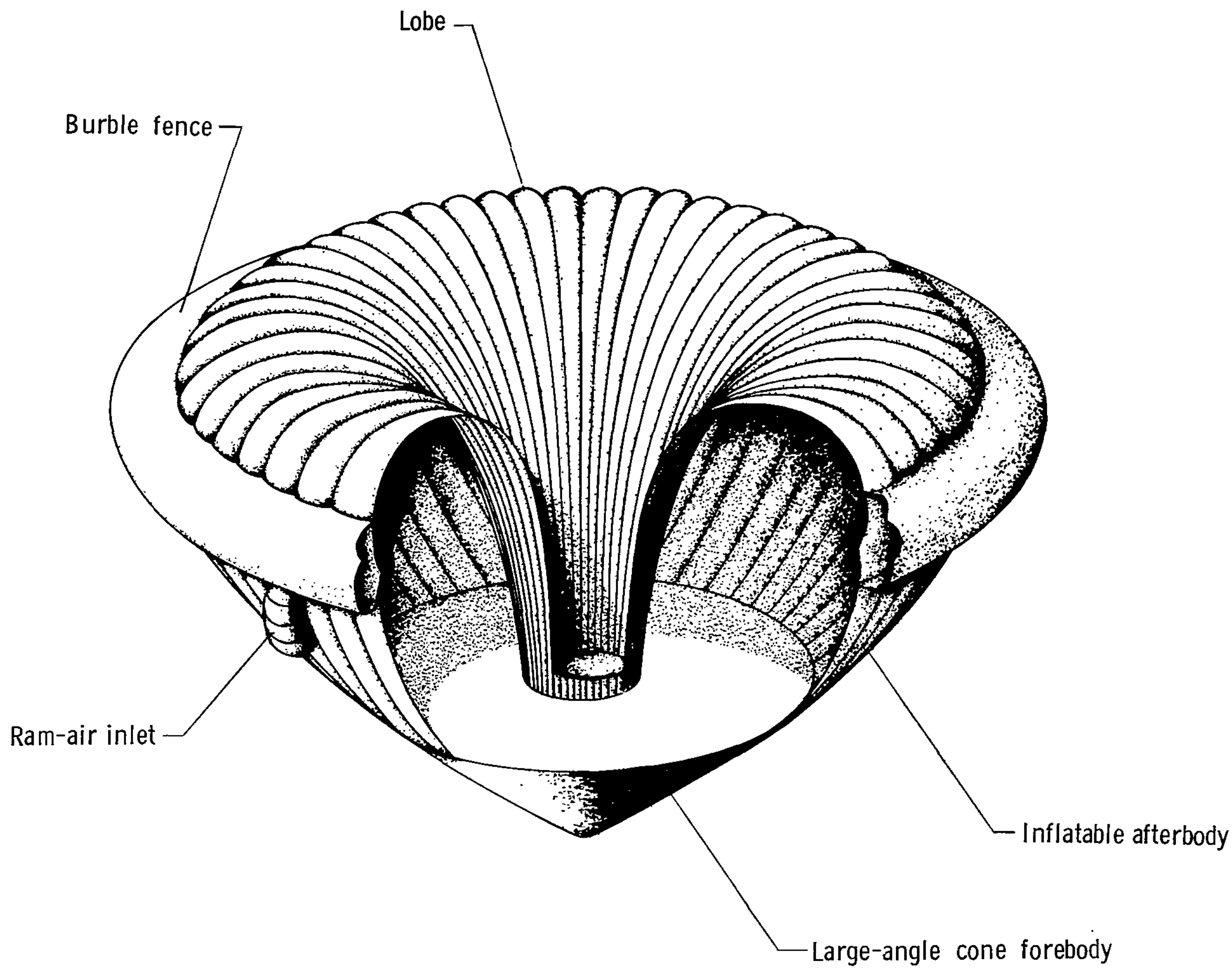


Figure 1.- Illustration of attached inflatable decelerator.

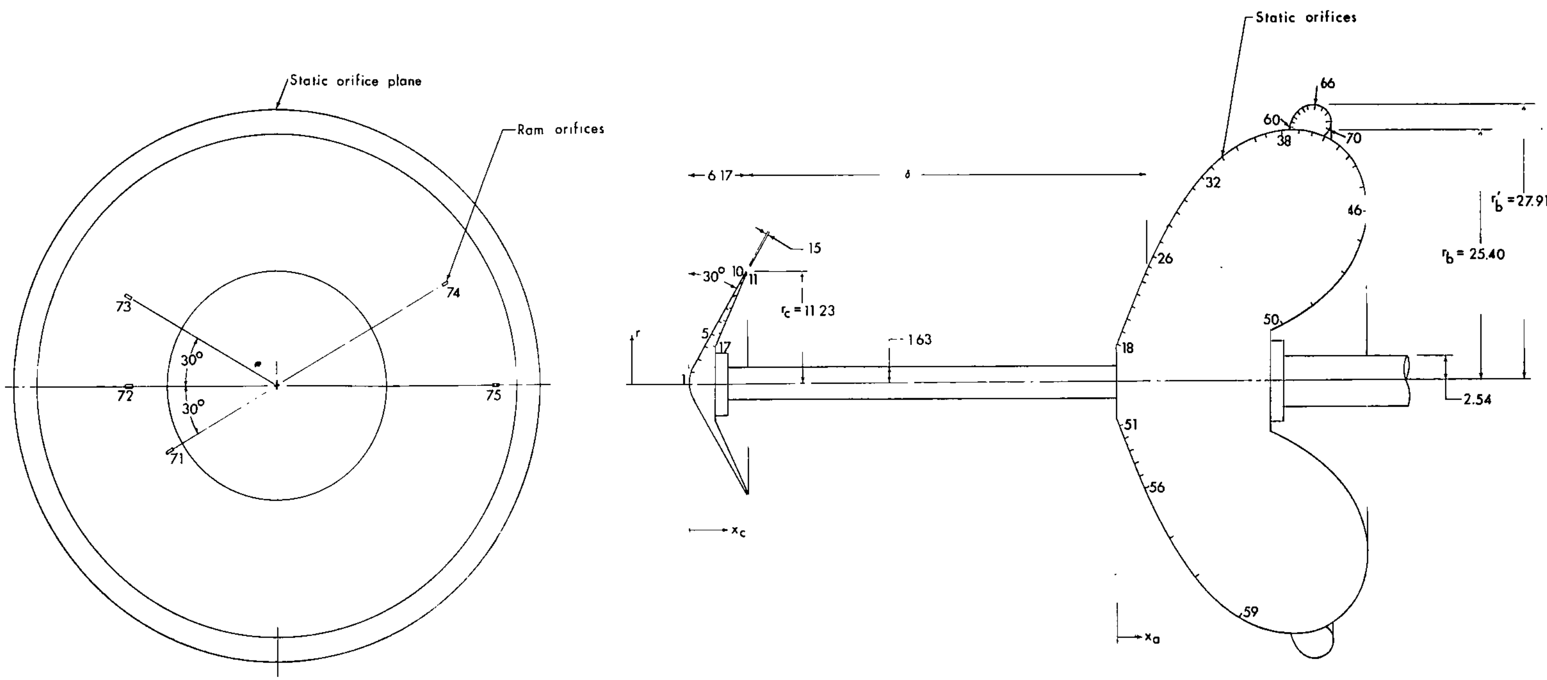


Figure 2.- Details of pressure-distribution model. Dimensions are in centimeters unless otherwise specified.

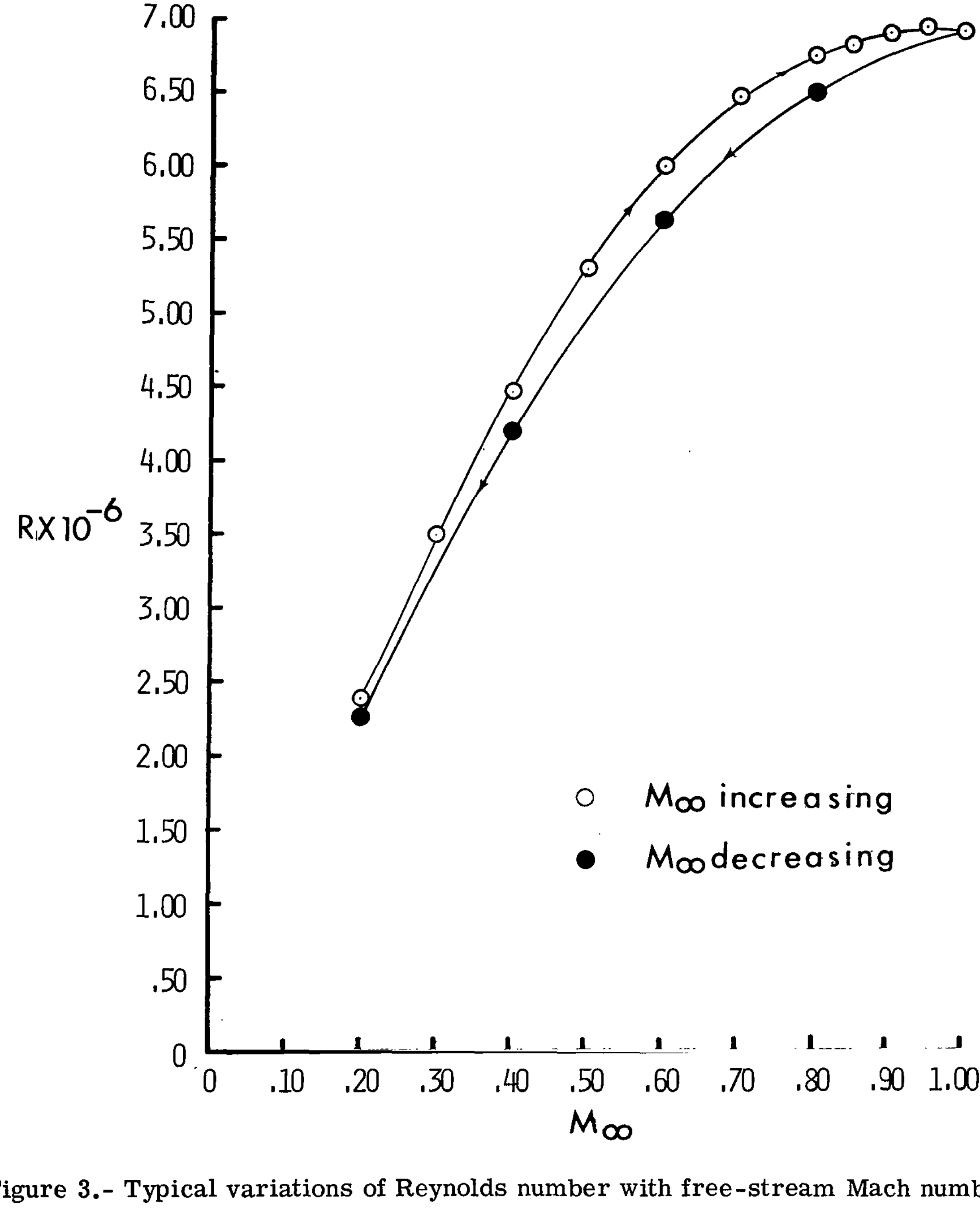


Figure 3.- Typical variations of Reynolds number with free-stream Mach number.

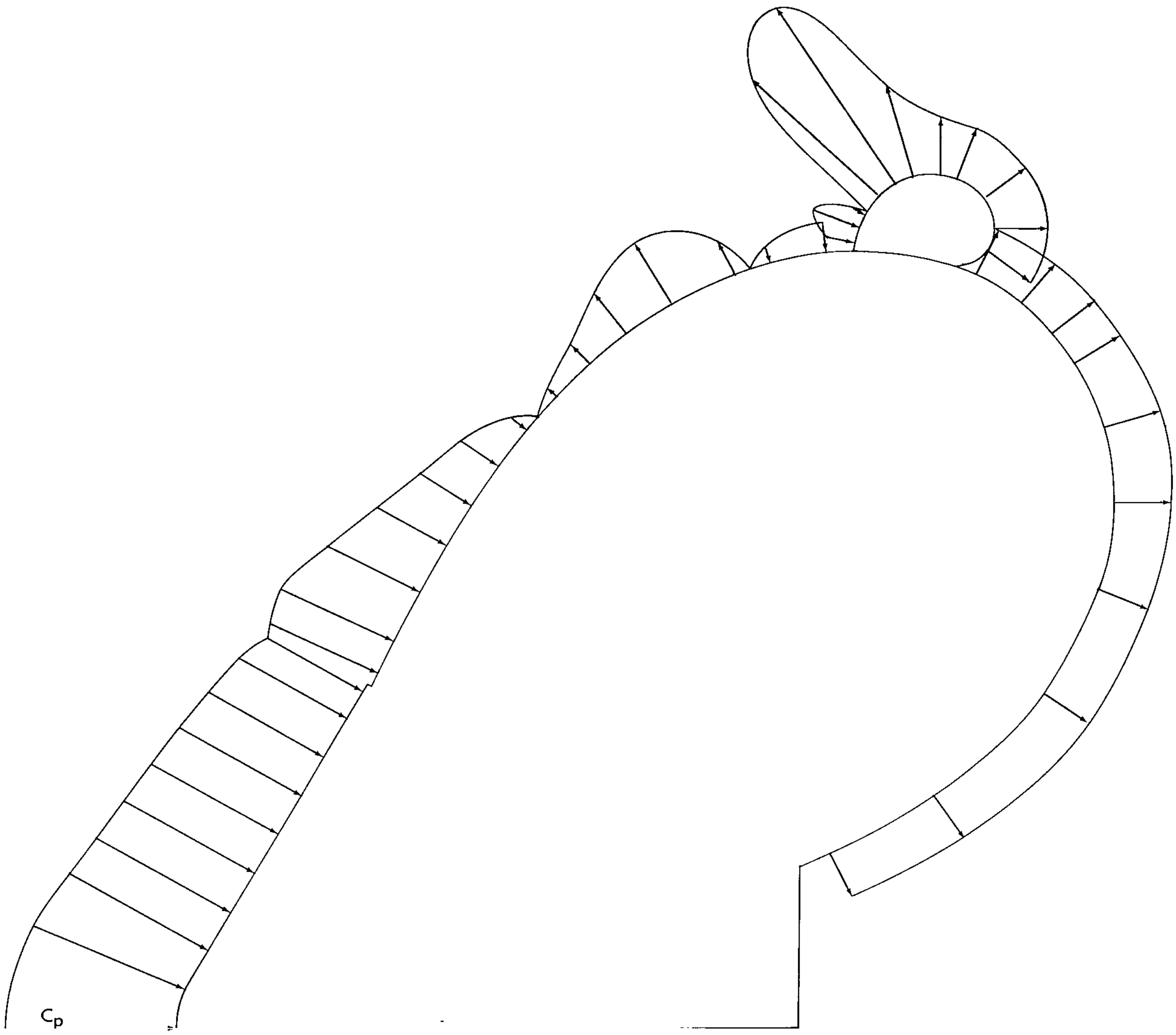
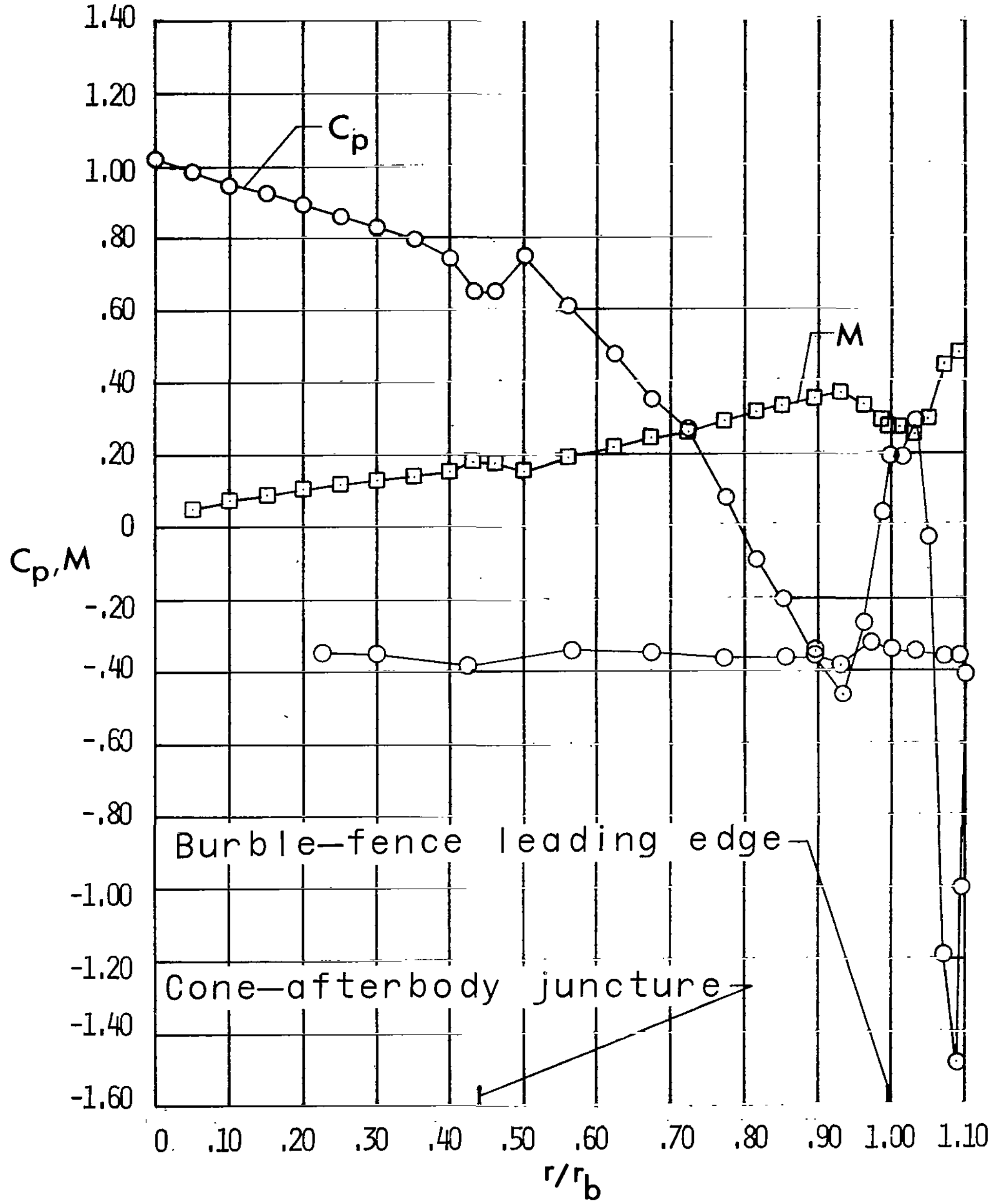
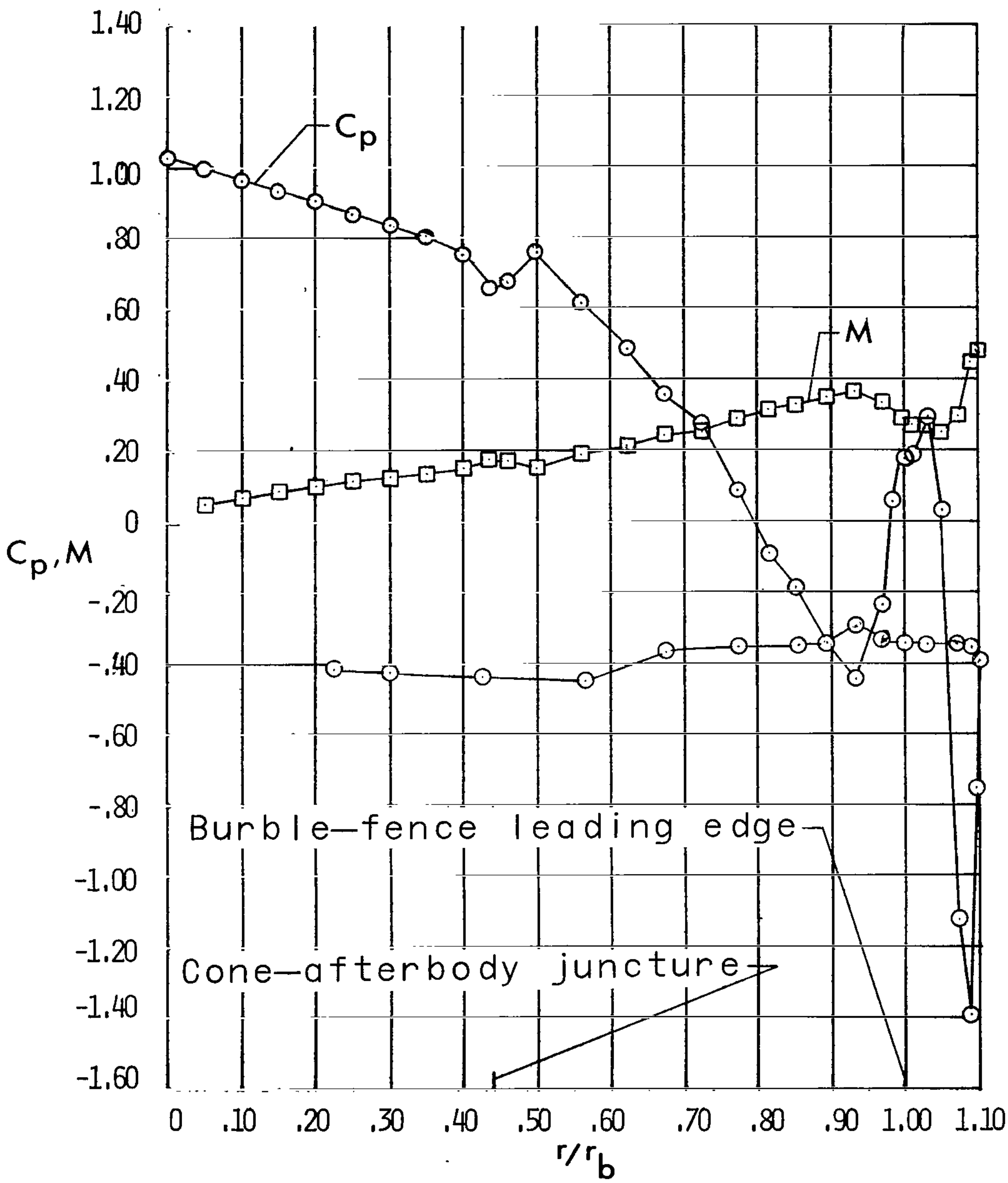


Figure 4.- Typical surface pressure distribution for attached inflatable decelerator with cone attached. $M_\infty = 0.40$.



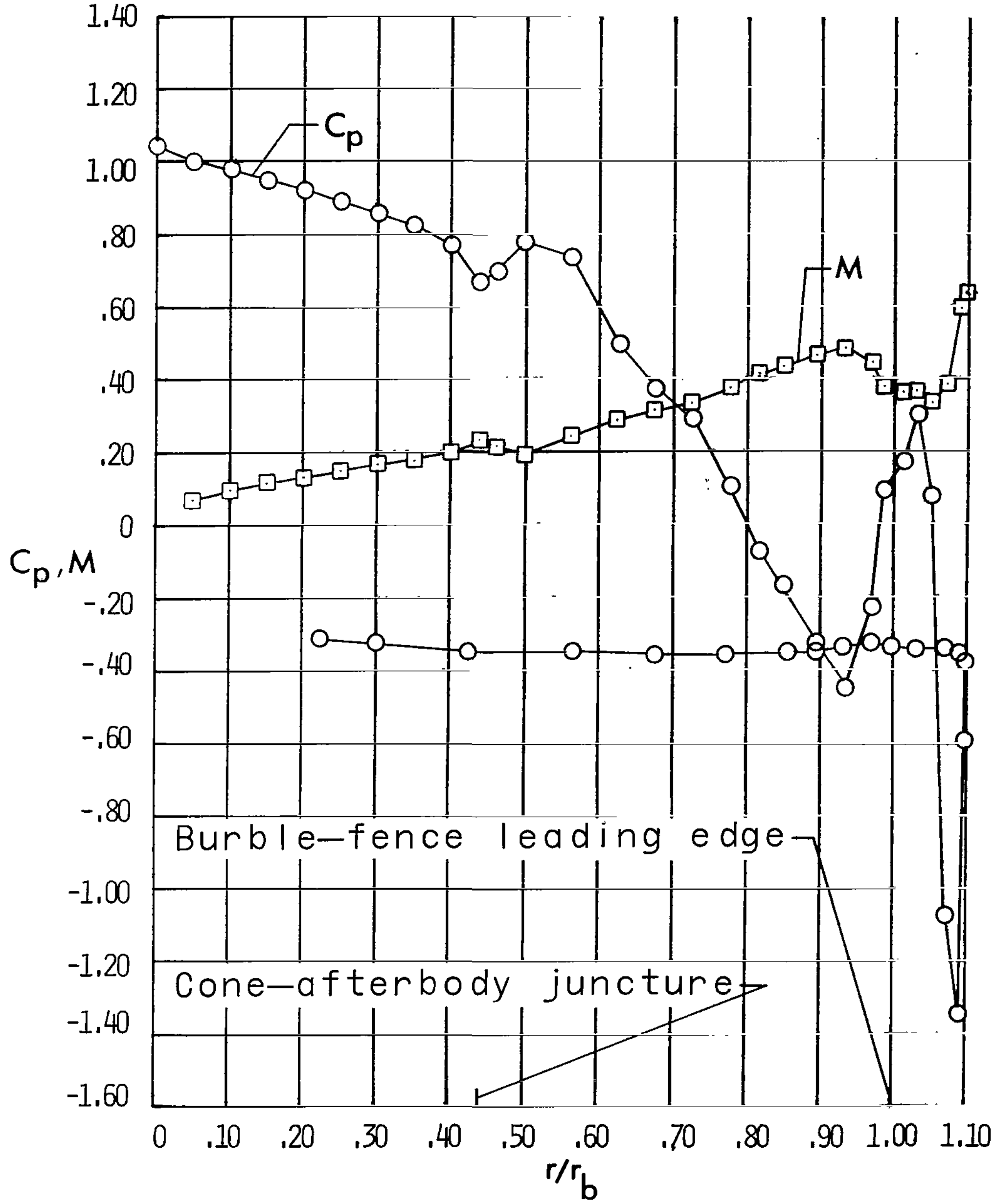
(a) $M_\infty = 0.20$.

Figure 5.- Experimental pressures and local Mach numbers for AID with cone attached.



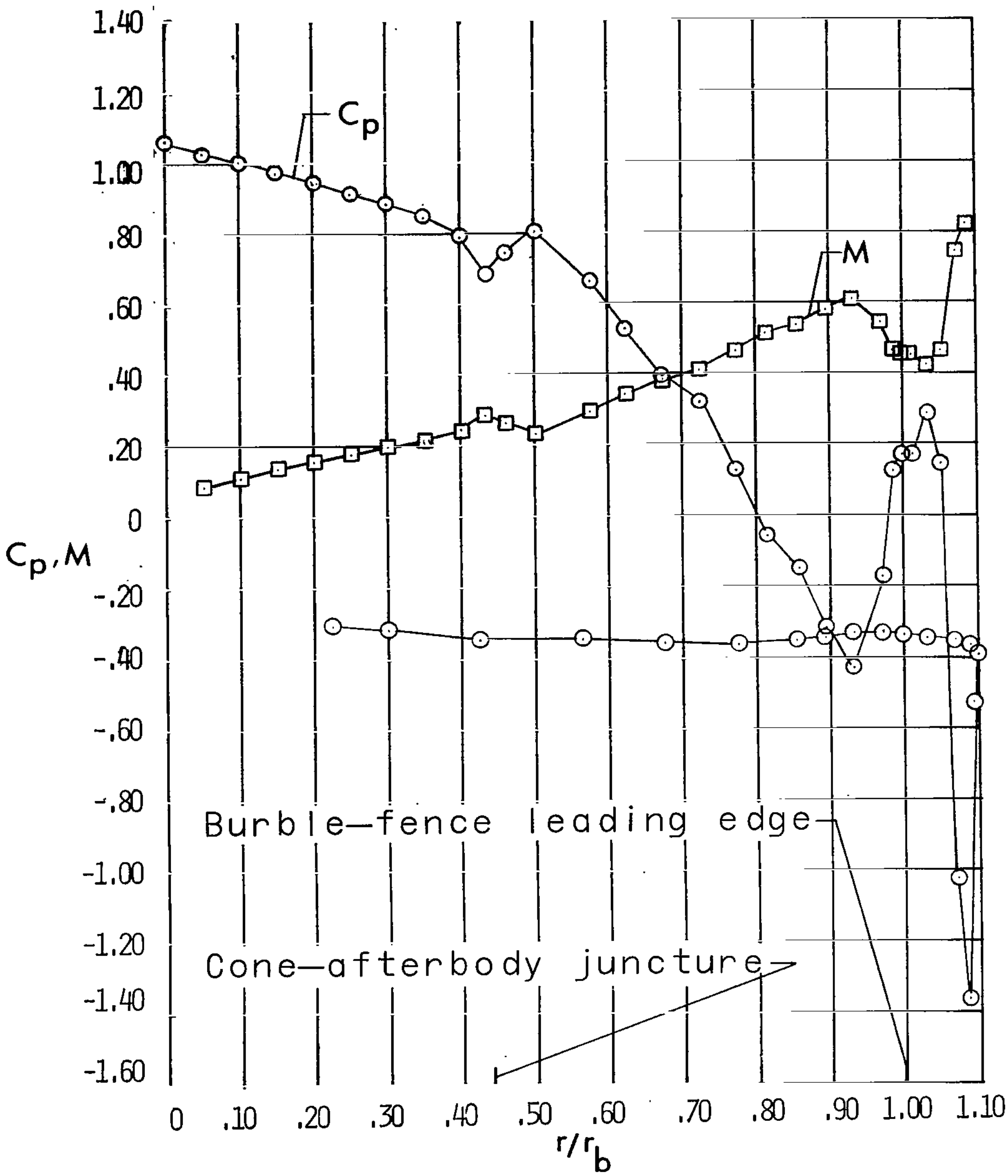
(b) $M_\infty = 0.30$.

Figure 5.- Continued.



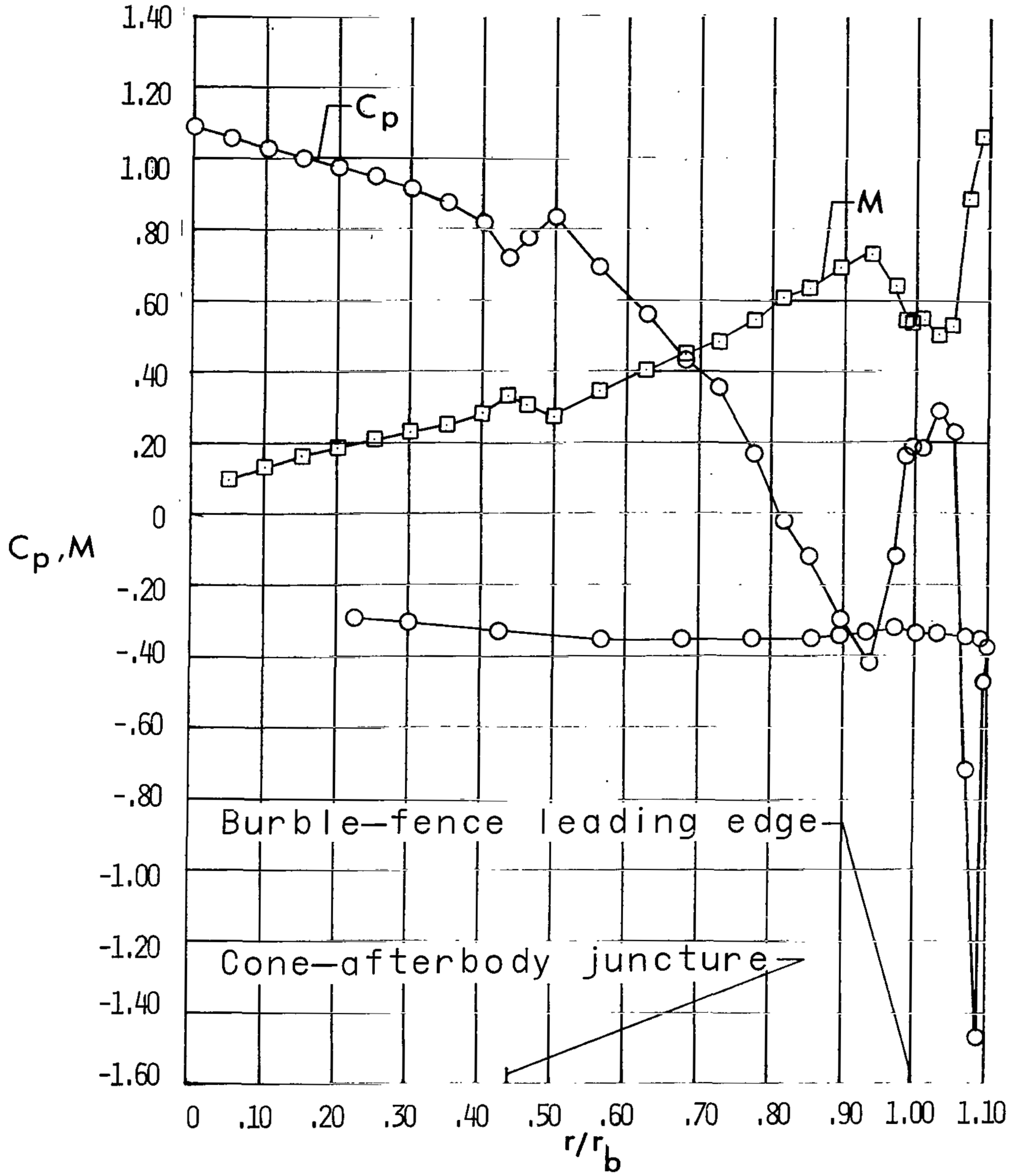
(c) $M_\infty = 0.40$.

Figure 5.- Continued.



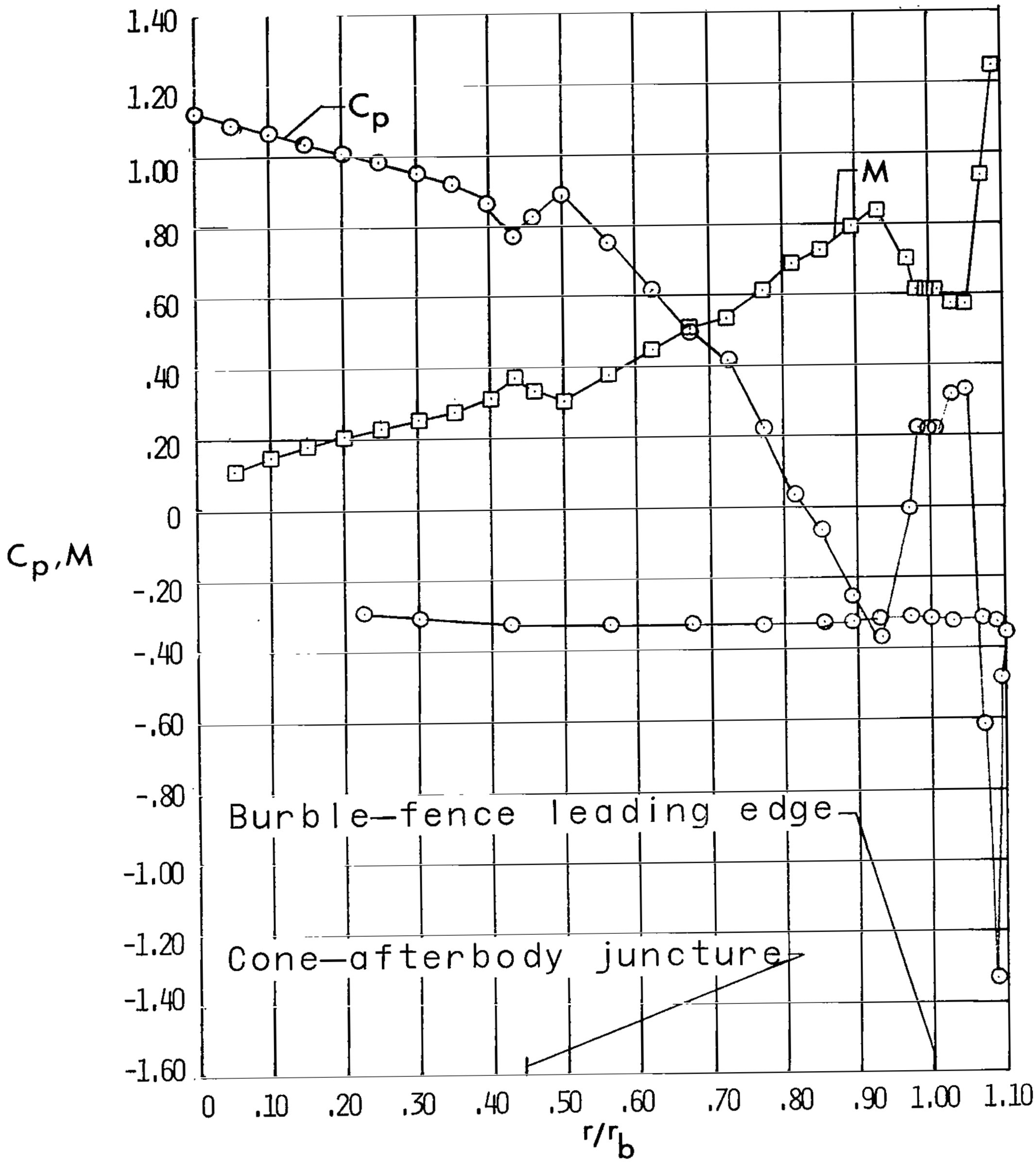
(d) $M_\infty = 0.50$.

Figure 5.- Continued.



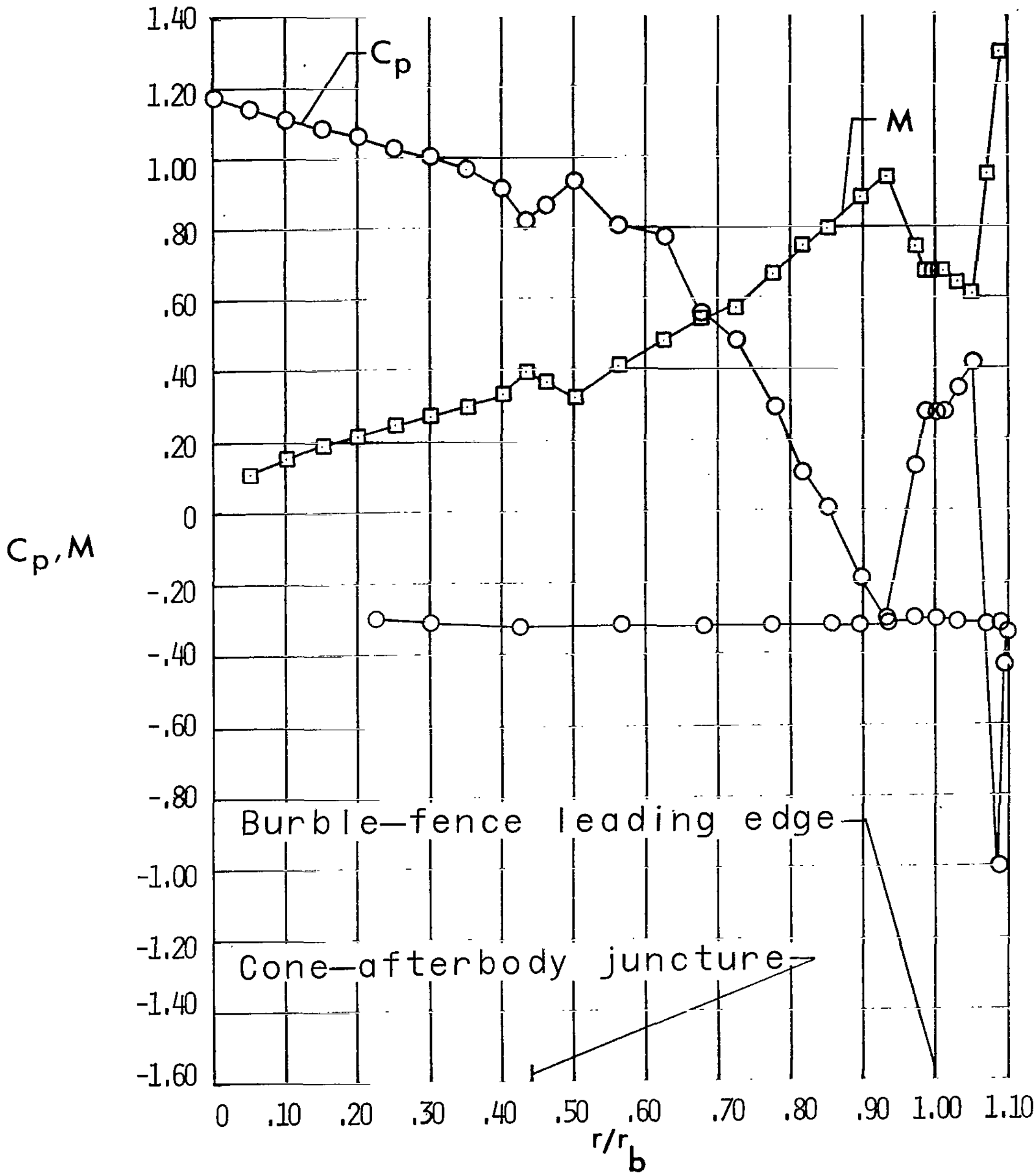
(e) $M_\infty = 0.60$.

Figure 5.- Continued.



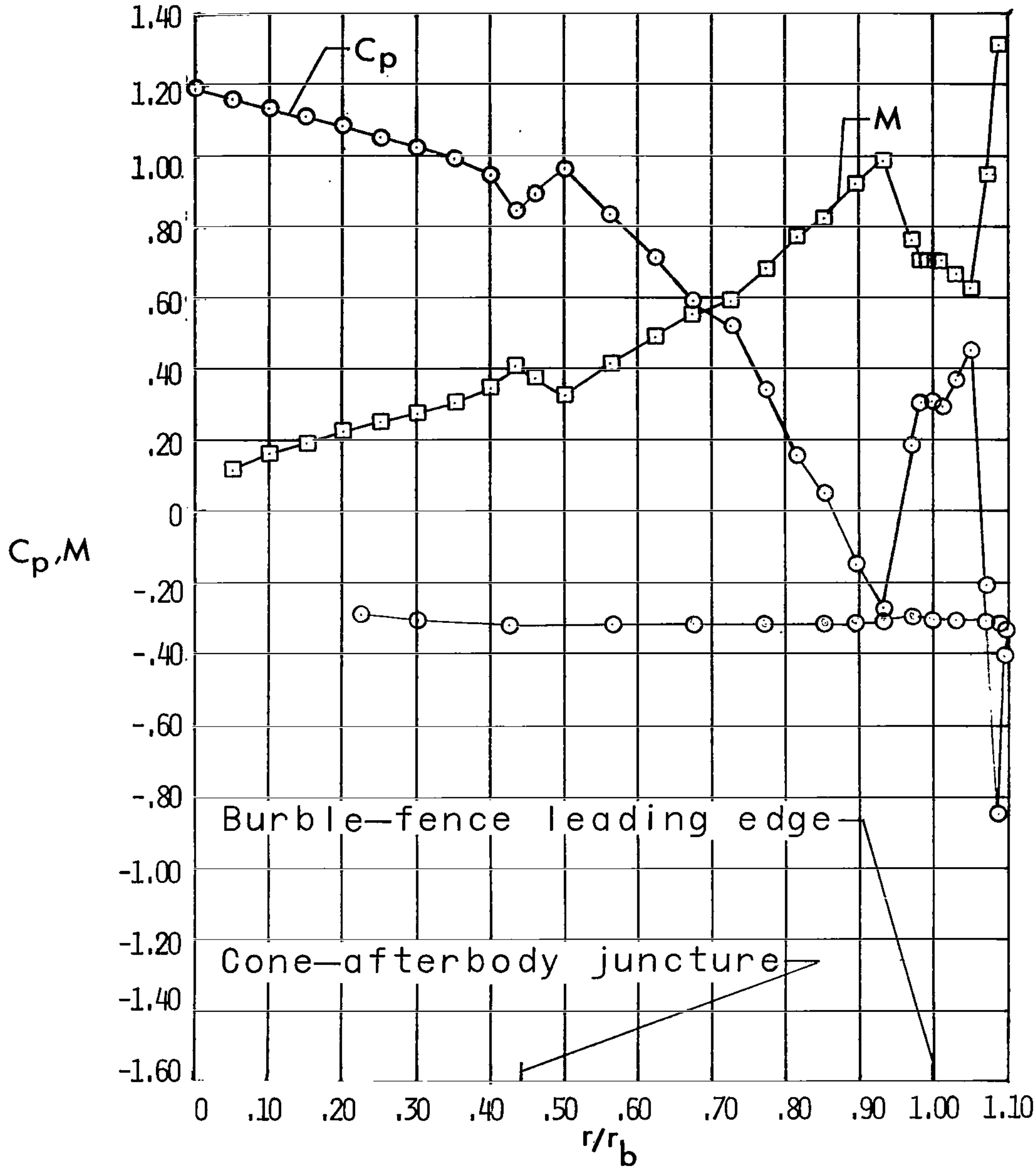
(f) $M_\infty = 0.70$.

Figure 5.- Continued.



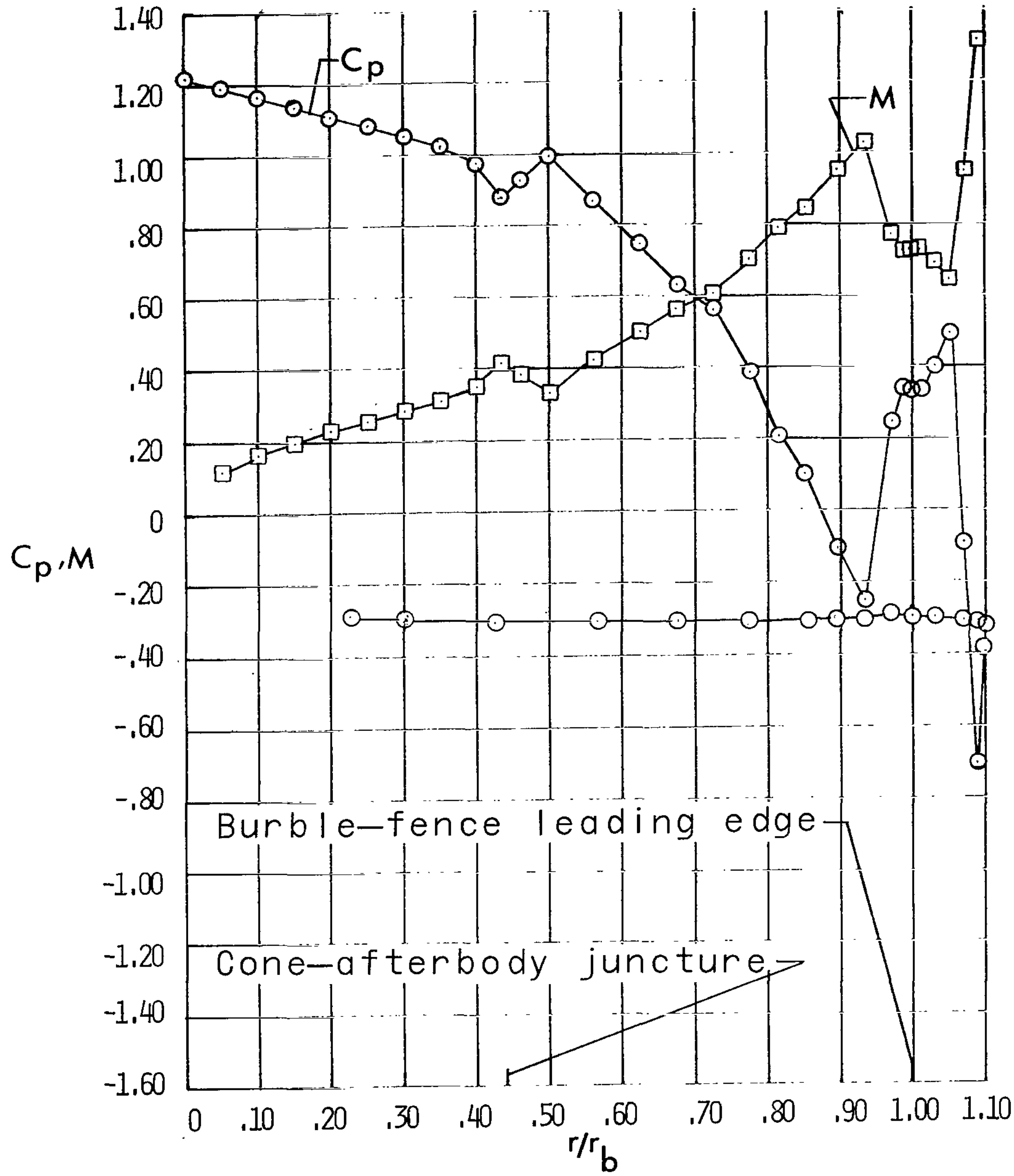
(g) $M_\infty = 0.80$.

Figure 5.- Continued.



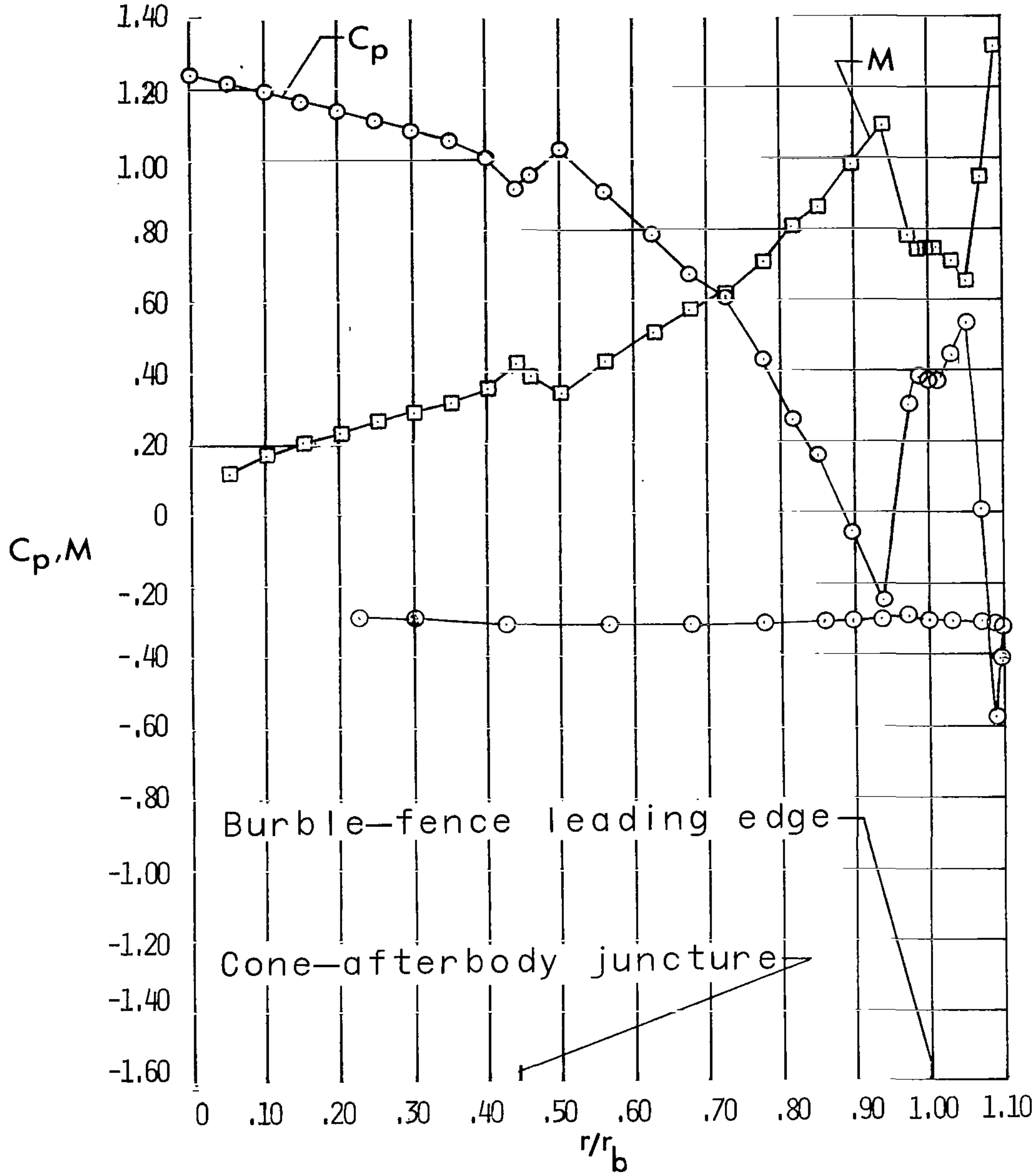
(h) $M_\infty = 0.85$.

Figure 5.- Continued.



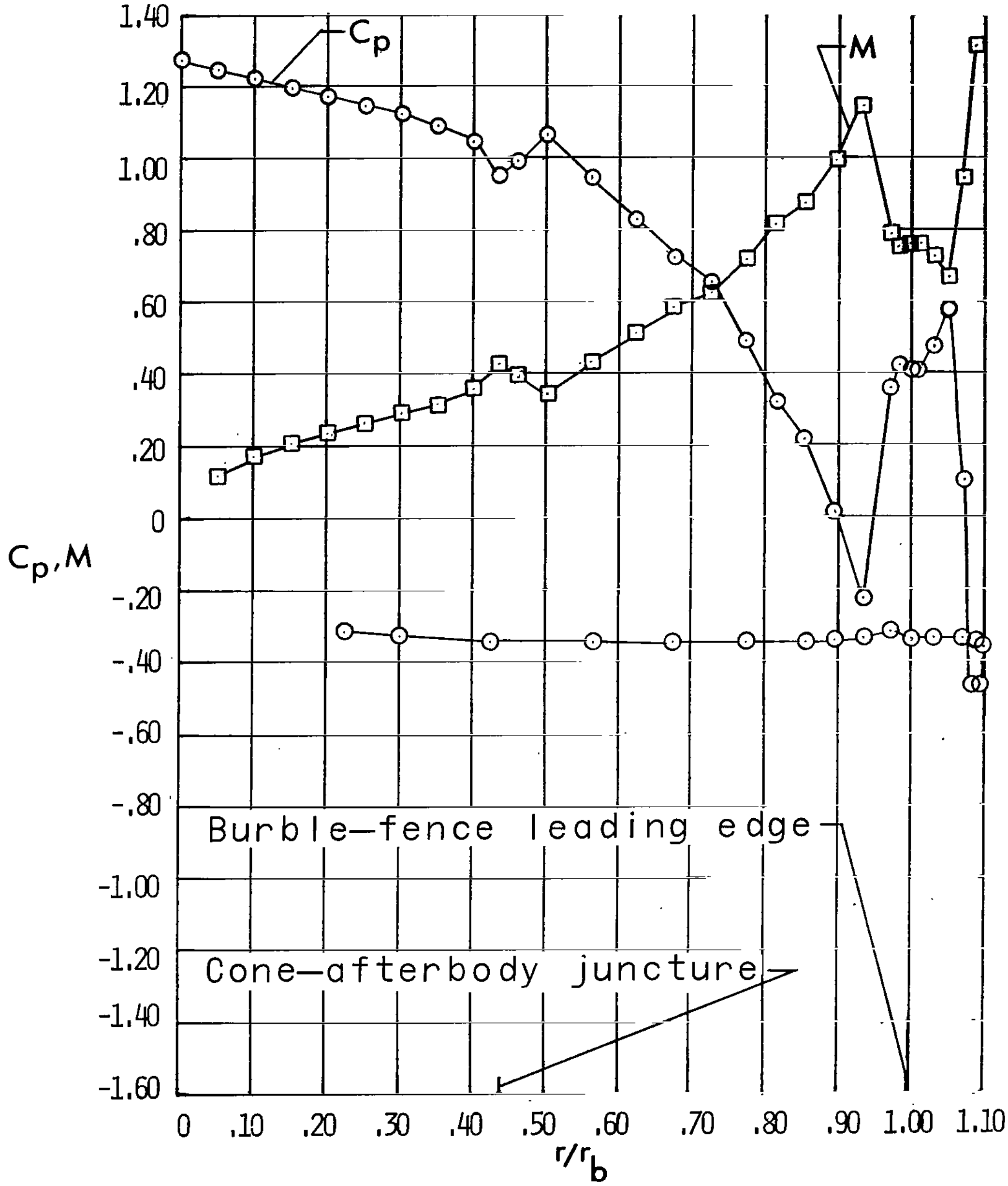
(i) $M_\infty = 0.90$.

Figure 5.- Continued.



(j) $M_\infty = 0.95$.

Figure 5.- Continued.



(k) $M_\infty = 1.00$.

Figure 5.- Concluded.

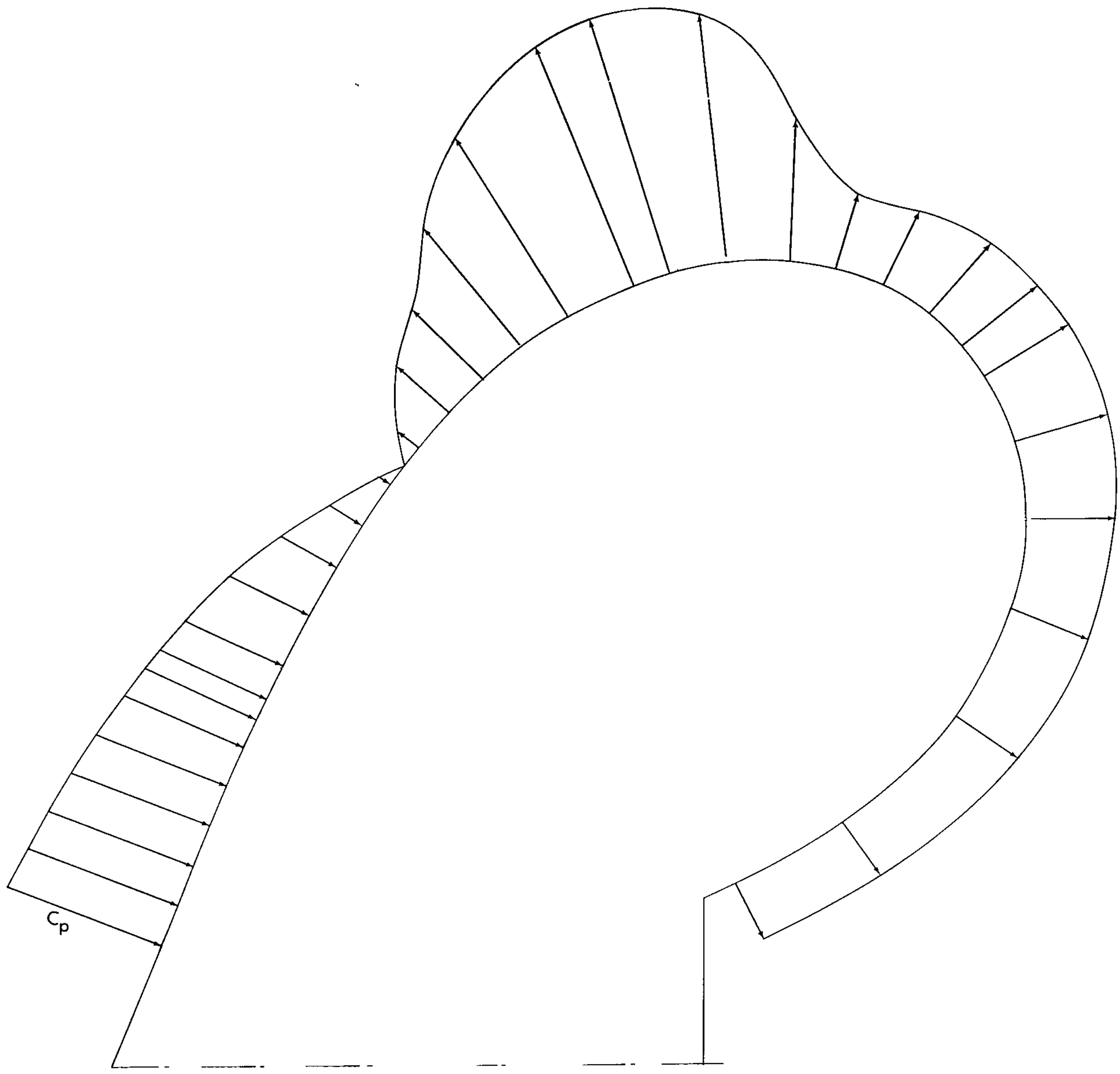
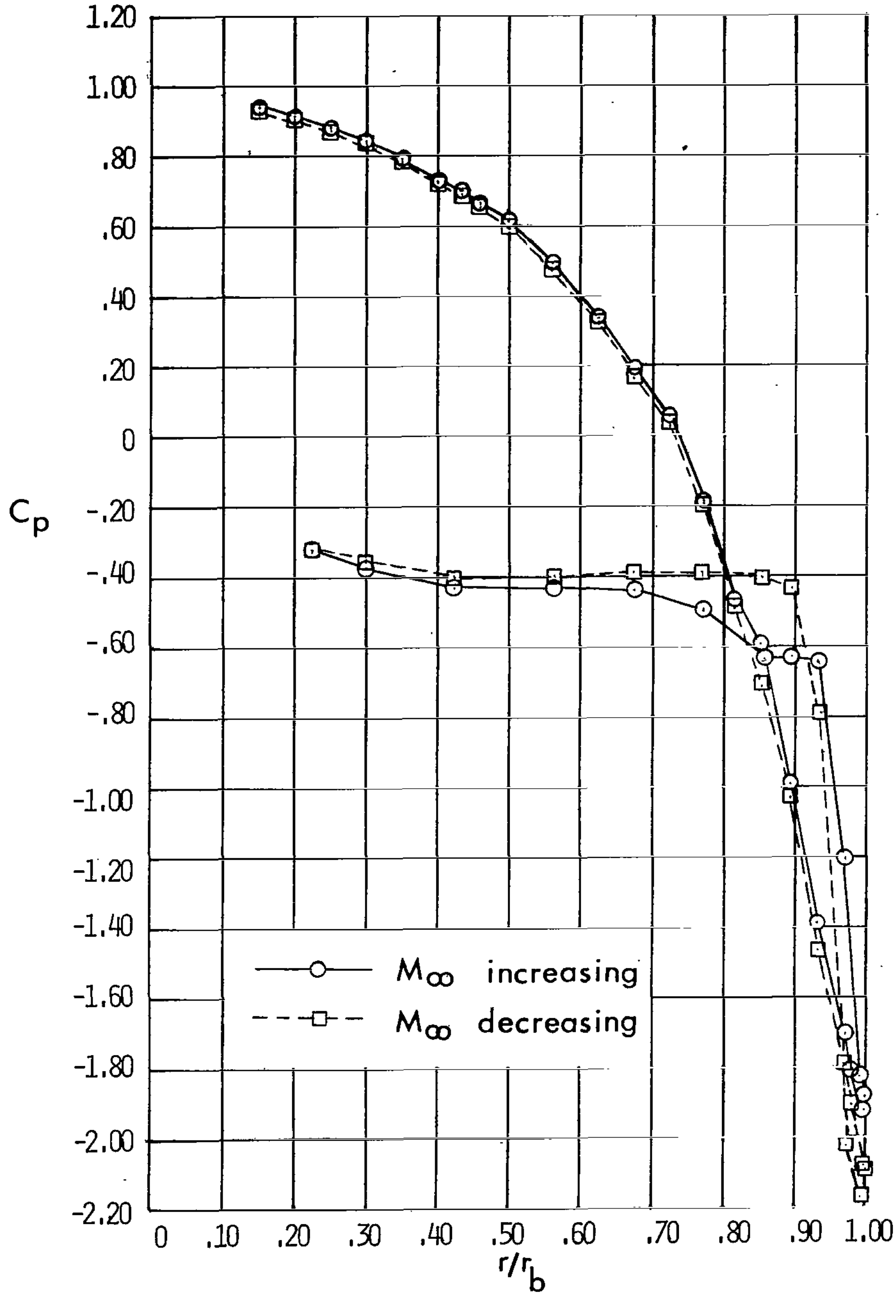
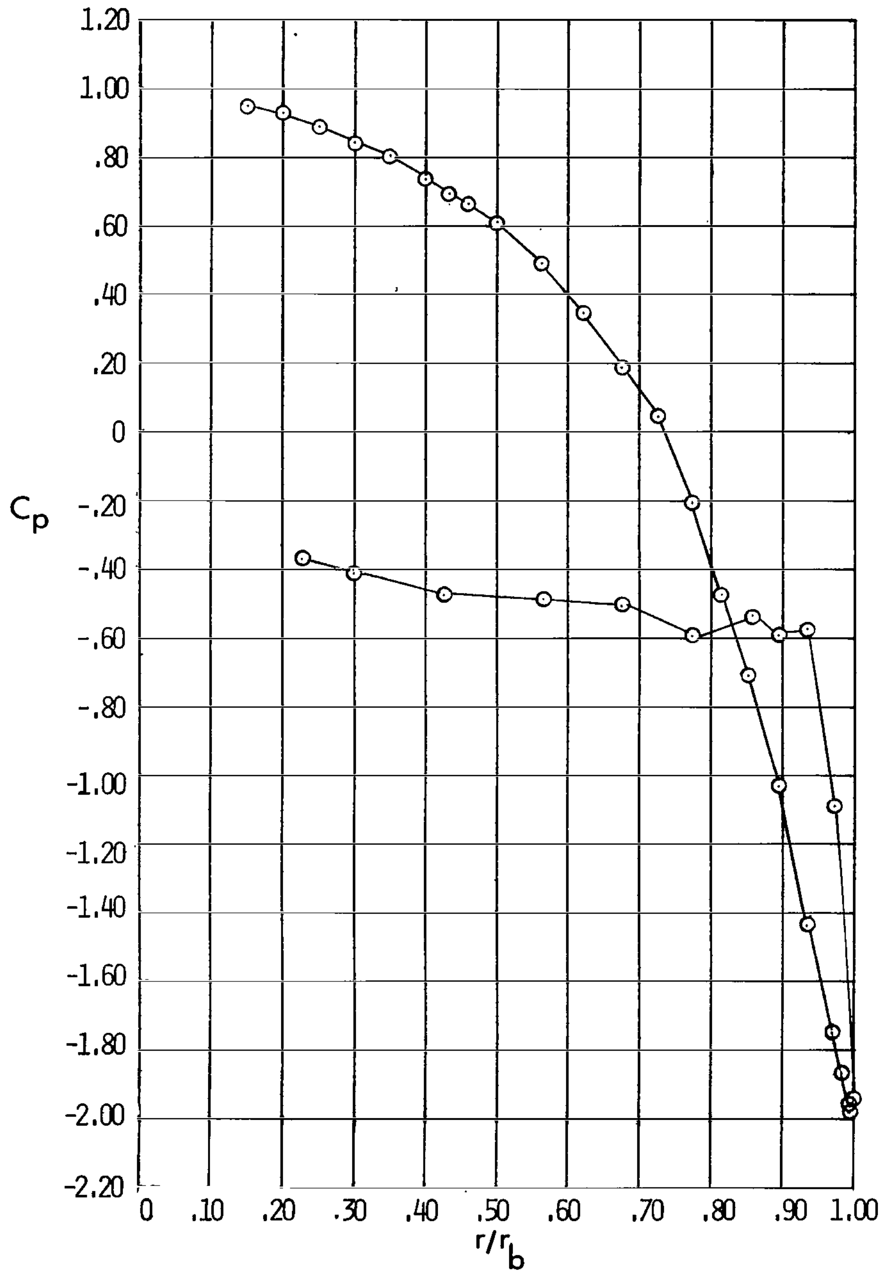


Figure 6.- Typical surface pressure distribution for AID without burble fence. $M_\infty = 0.40$.



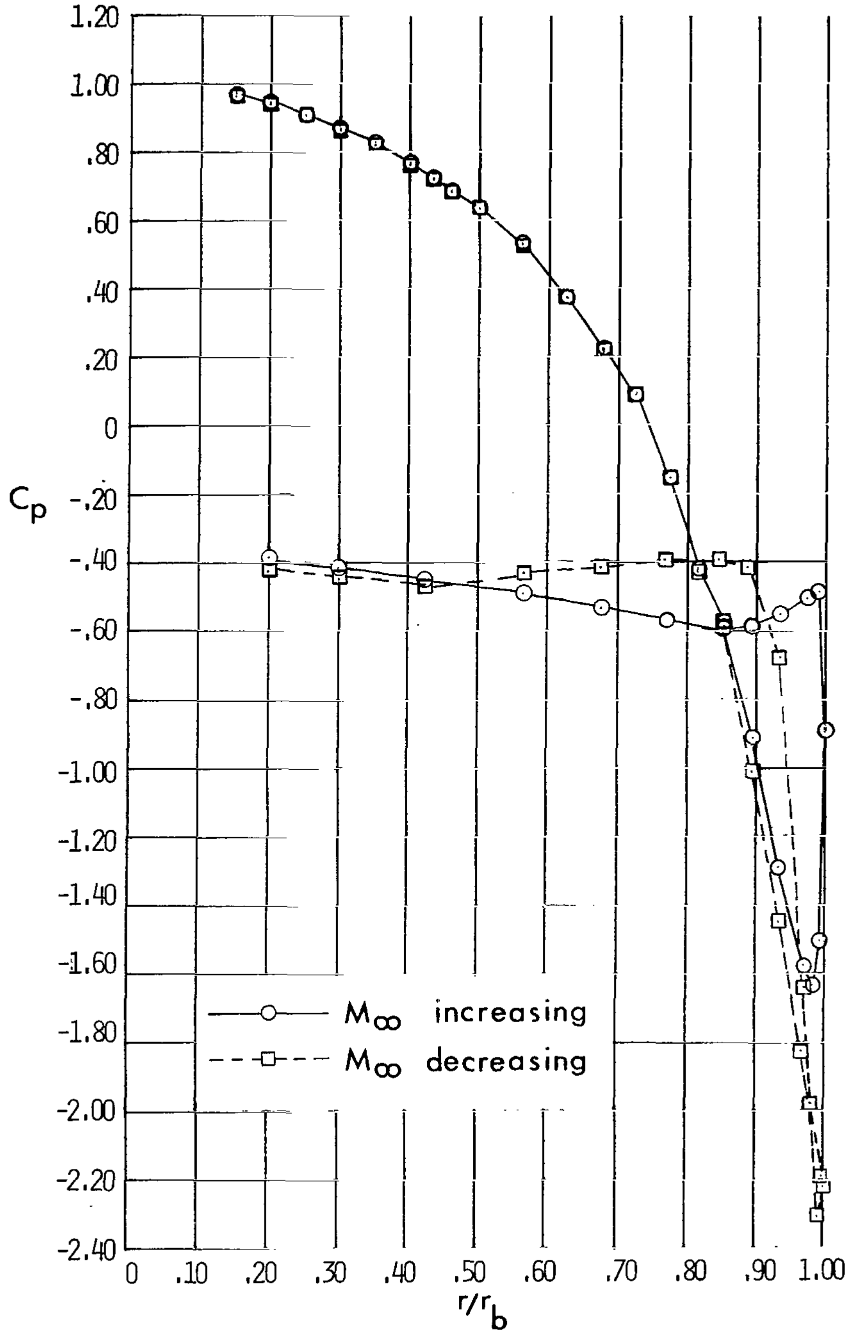
(a) $M_\infty = 0.20$.

Figure 7.- Experimental pressures for AID without fence and cone.



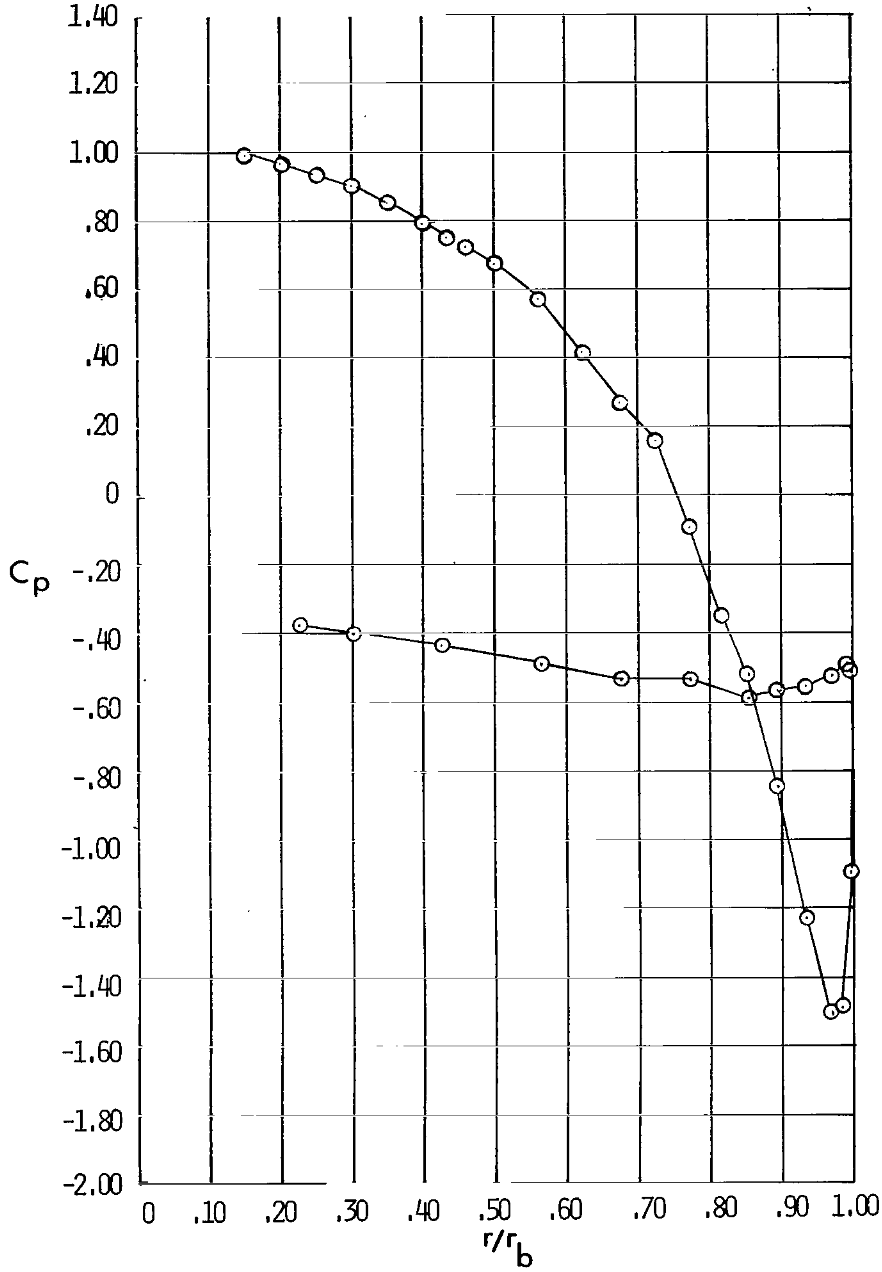
(b) $M_\infty = 0.30$.

Figure 7.- Continued.



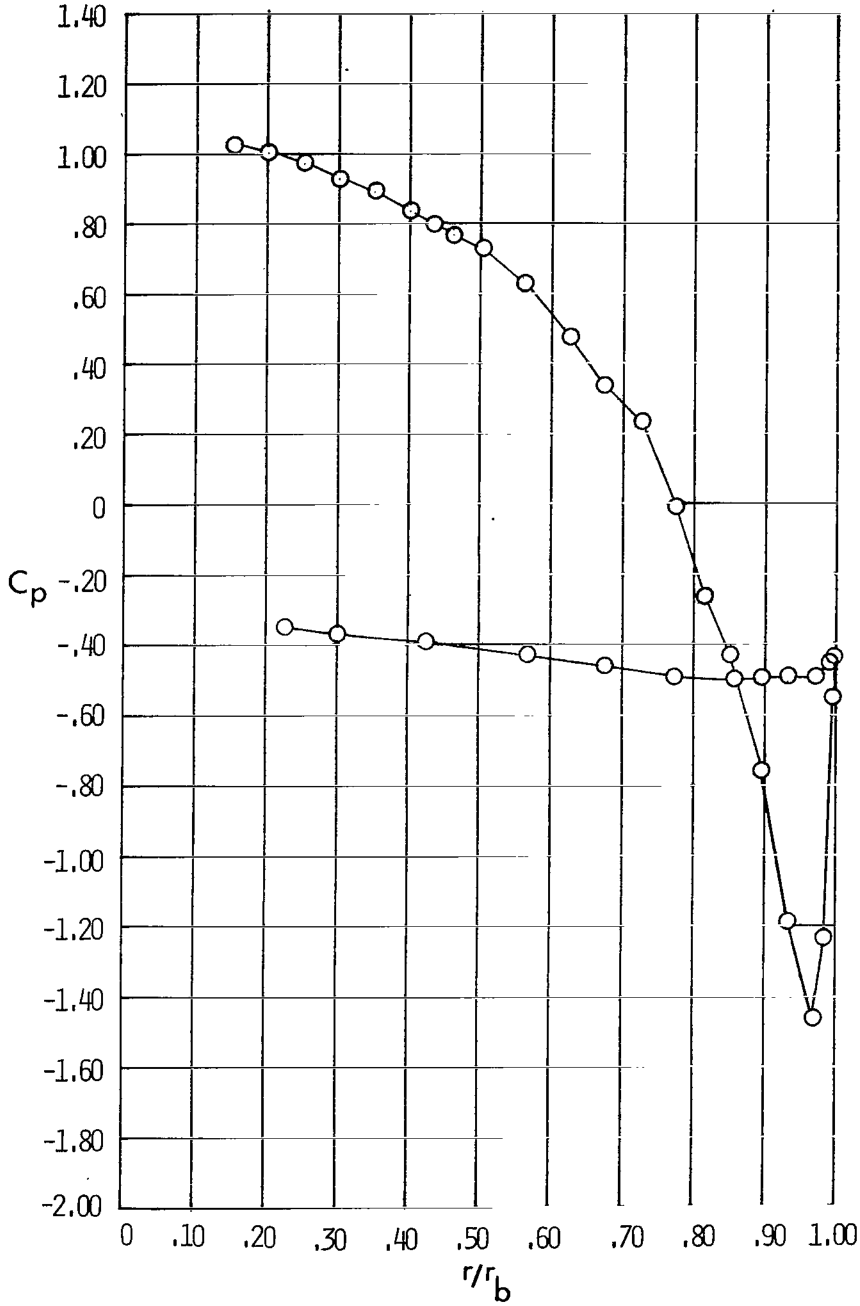
(c) $M_\infty = 0.40$.

Figure 7.- Continued.



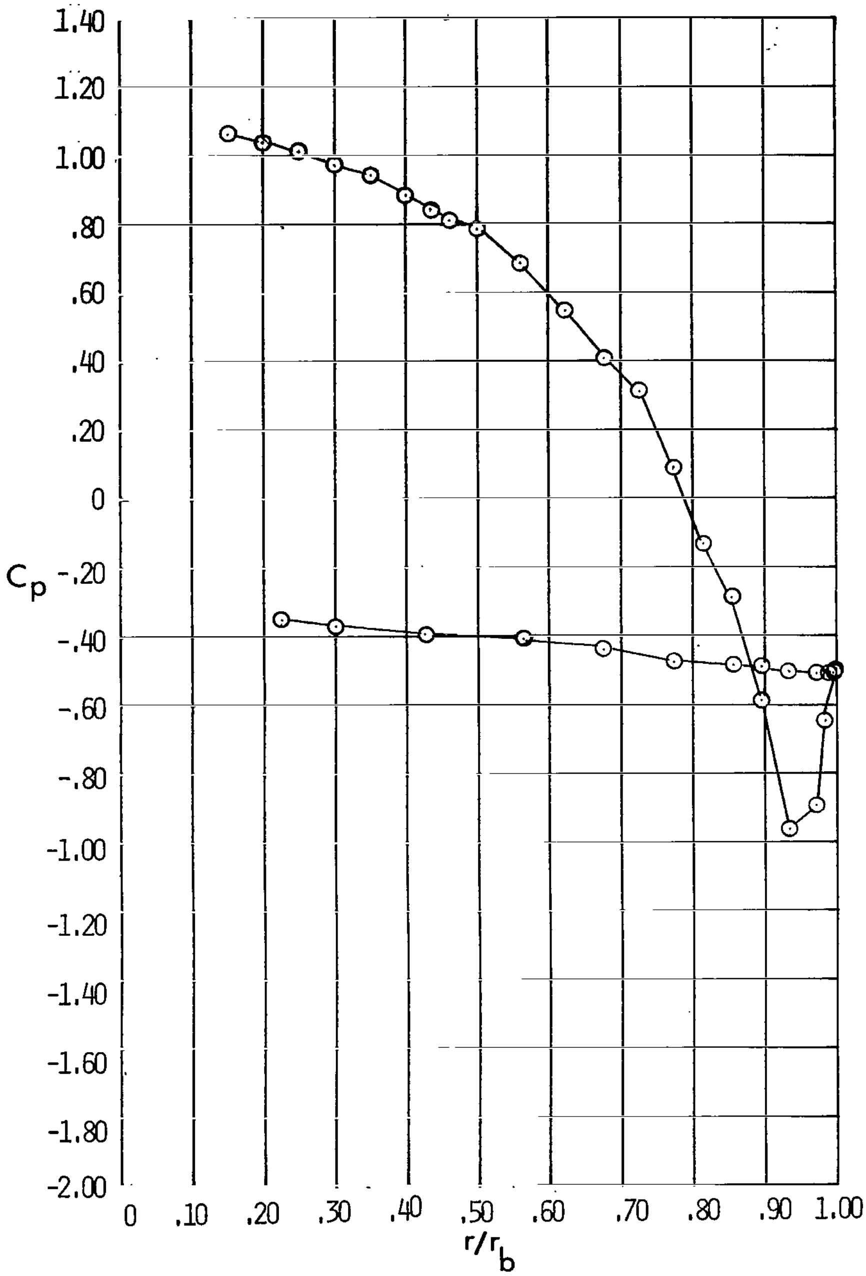
(d) $M_\infty = 0.50$.

Figure 7.- Continued.



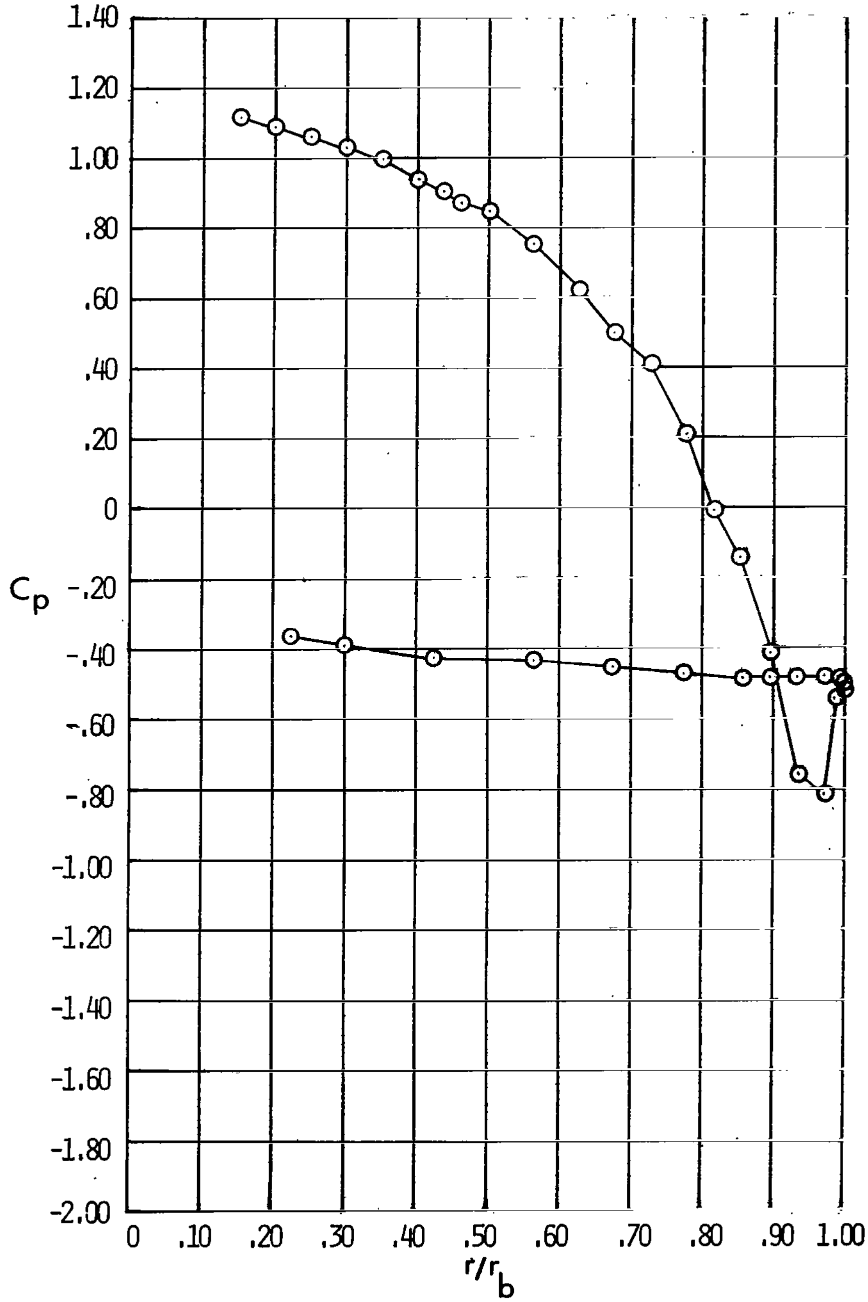
(e) $M_\infty = 0.60$.

Figure 7.- Continued.



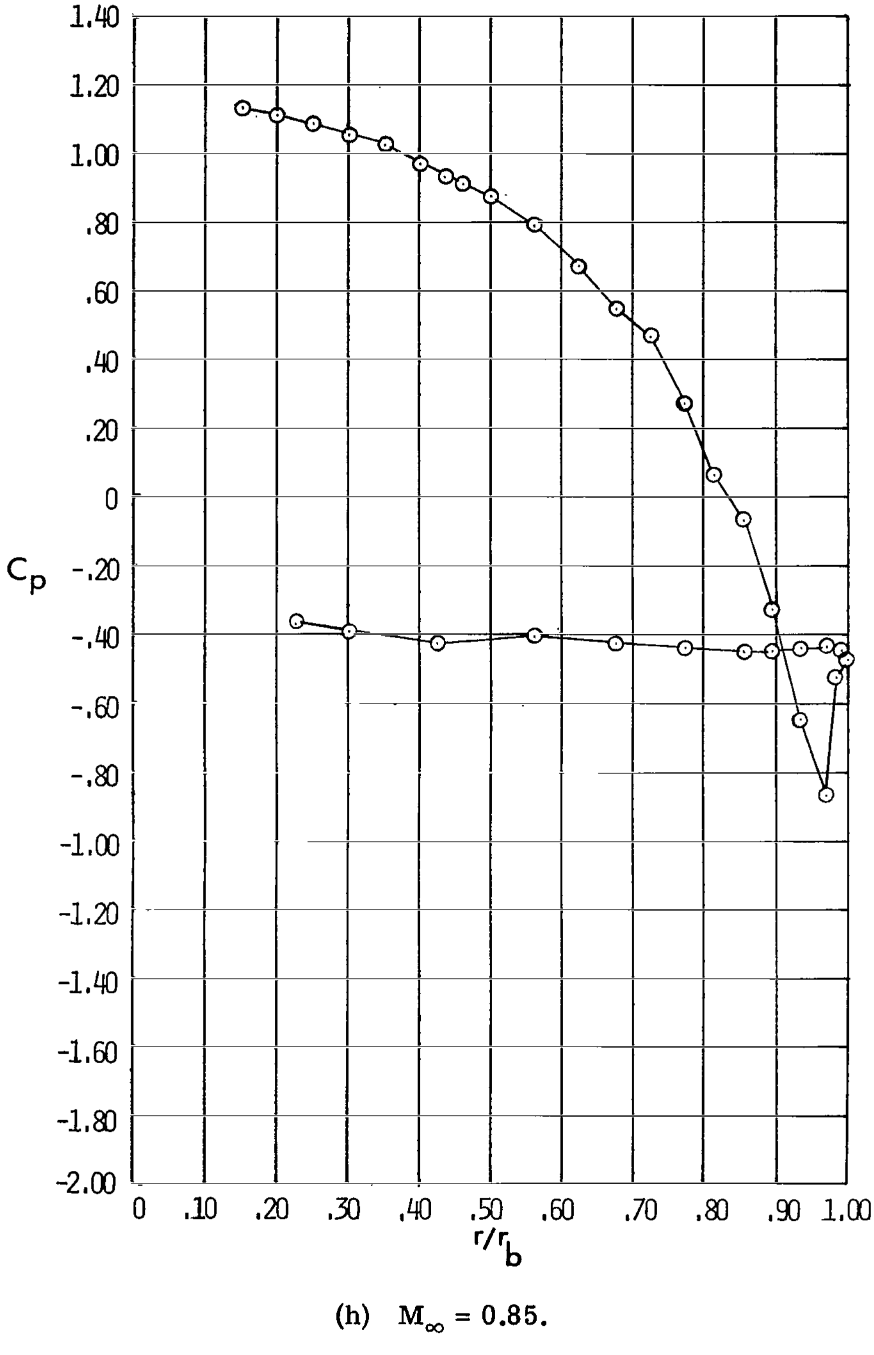
(f) $M_\infty = 0.70$.

Figure 7.- Continued.



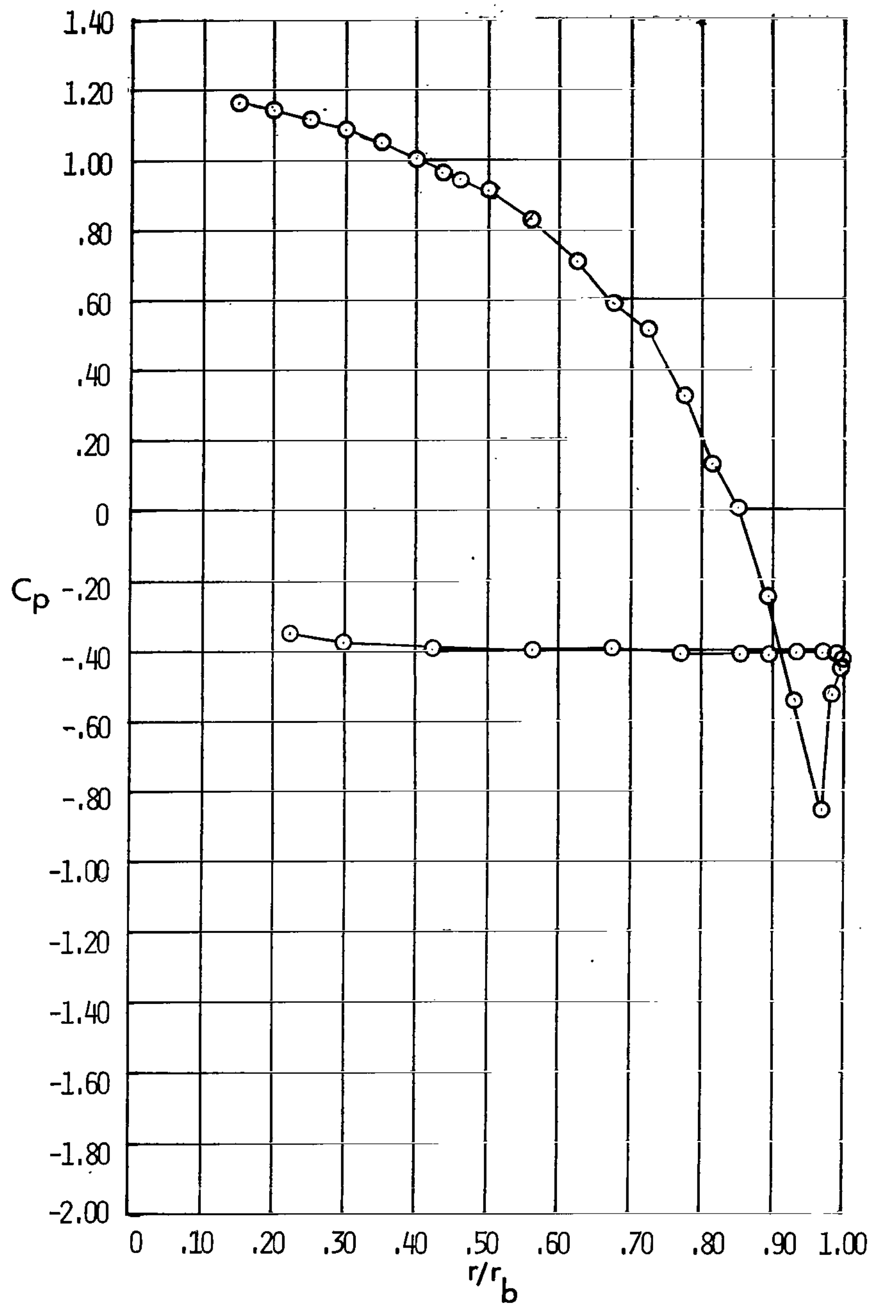
(g) $M_\infty = 0.80$.

Figure 7.- Continued.



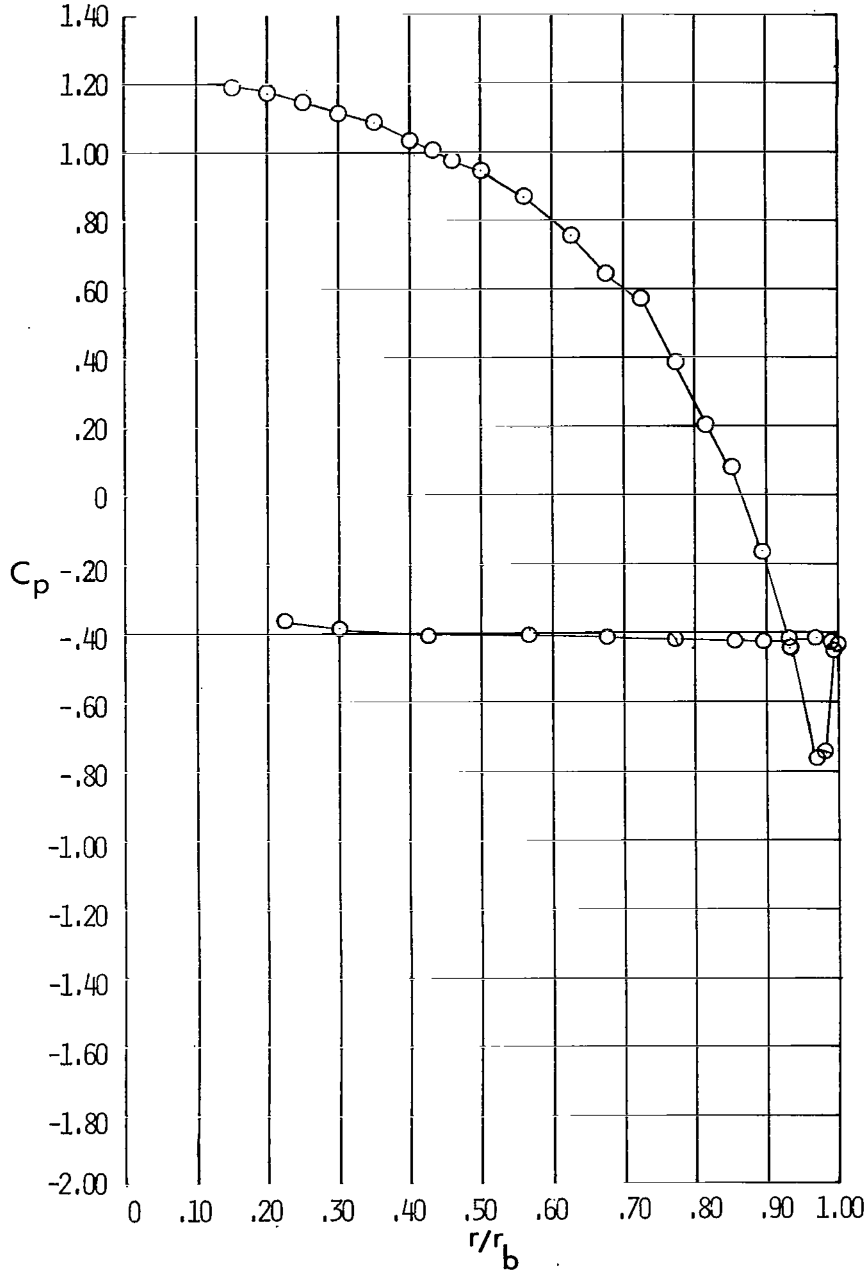
(h) $M_\infty = 0.85$.

Figure 7.- Continued.



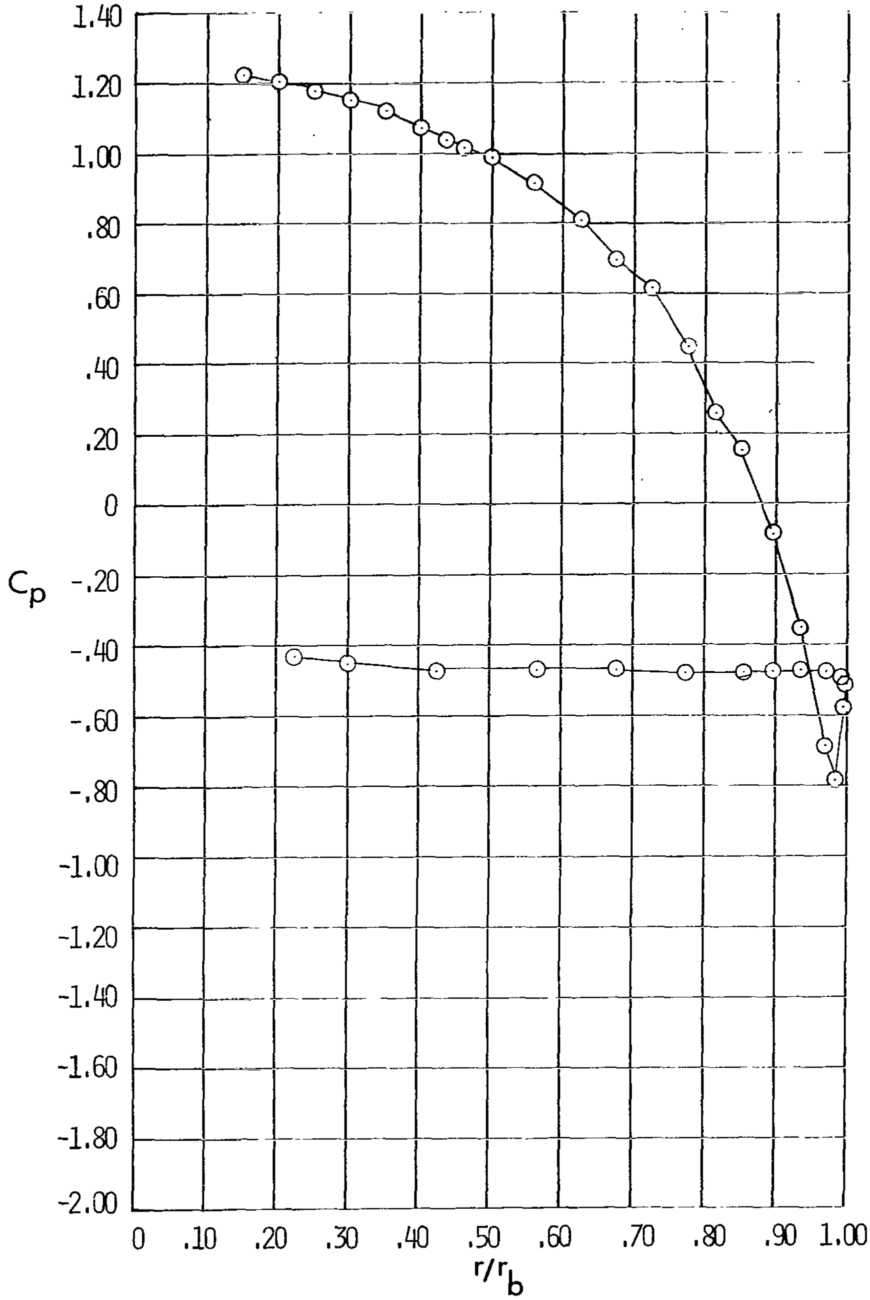
(i) $M_\infty = 0.90$.

Figure 7.- Continued.



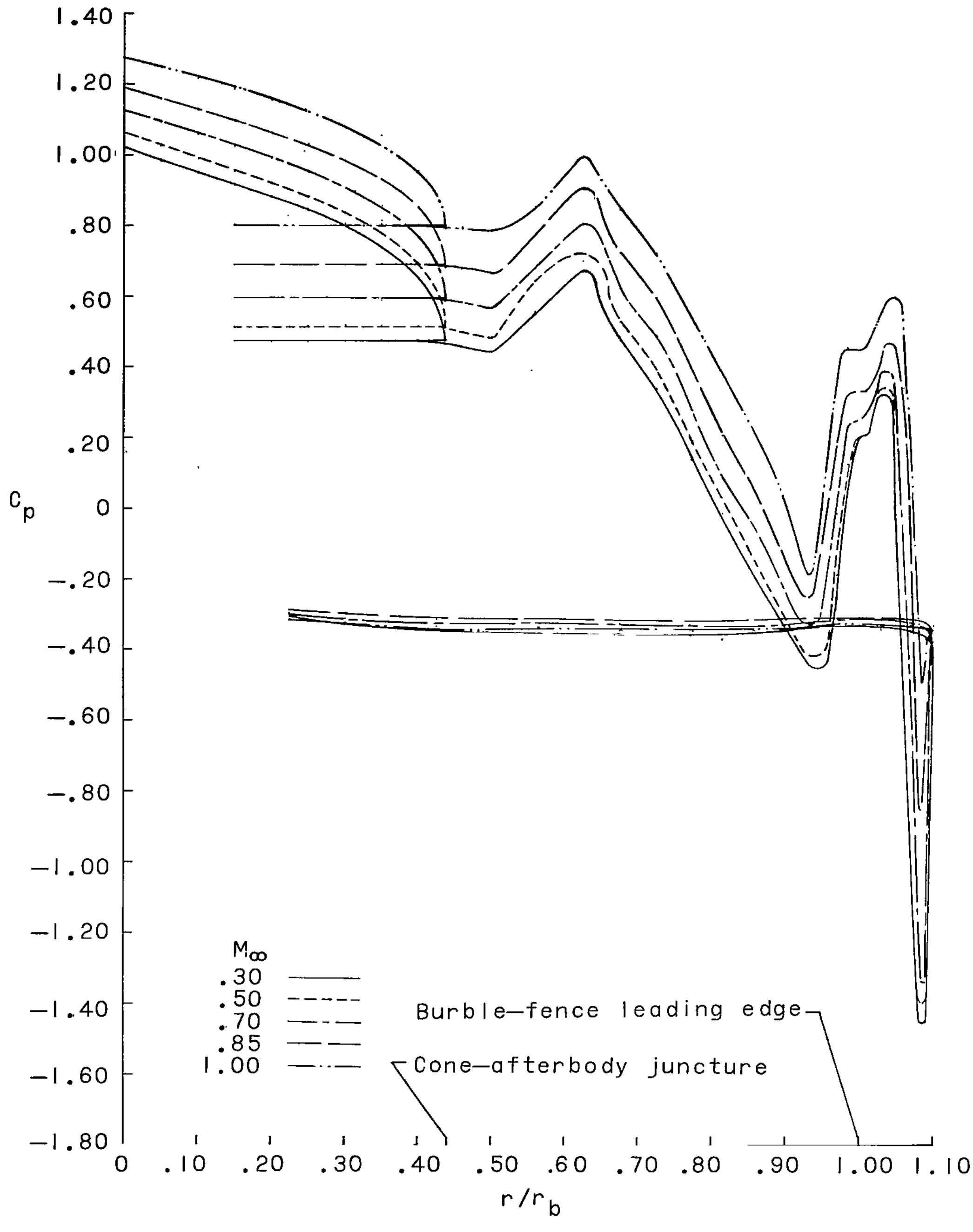
(j) $M_\infty = 0.95$.

Figure 7.- Continued.



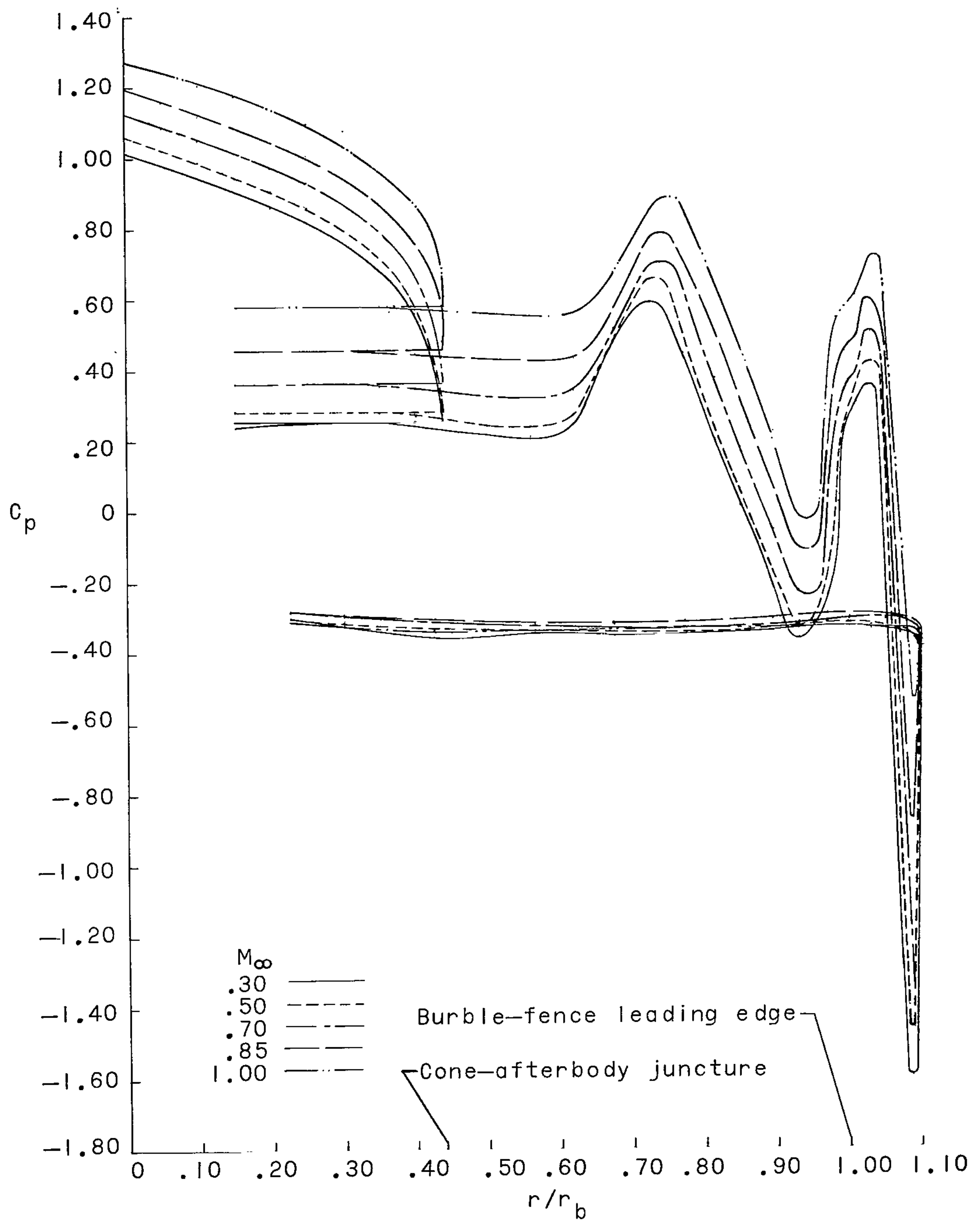
(k) $M_\infty = 1.00$.

Figure 7.- Concluded.



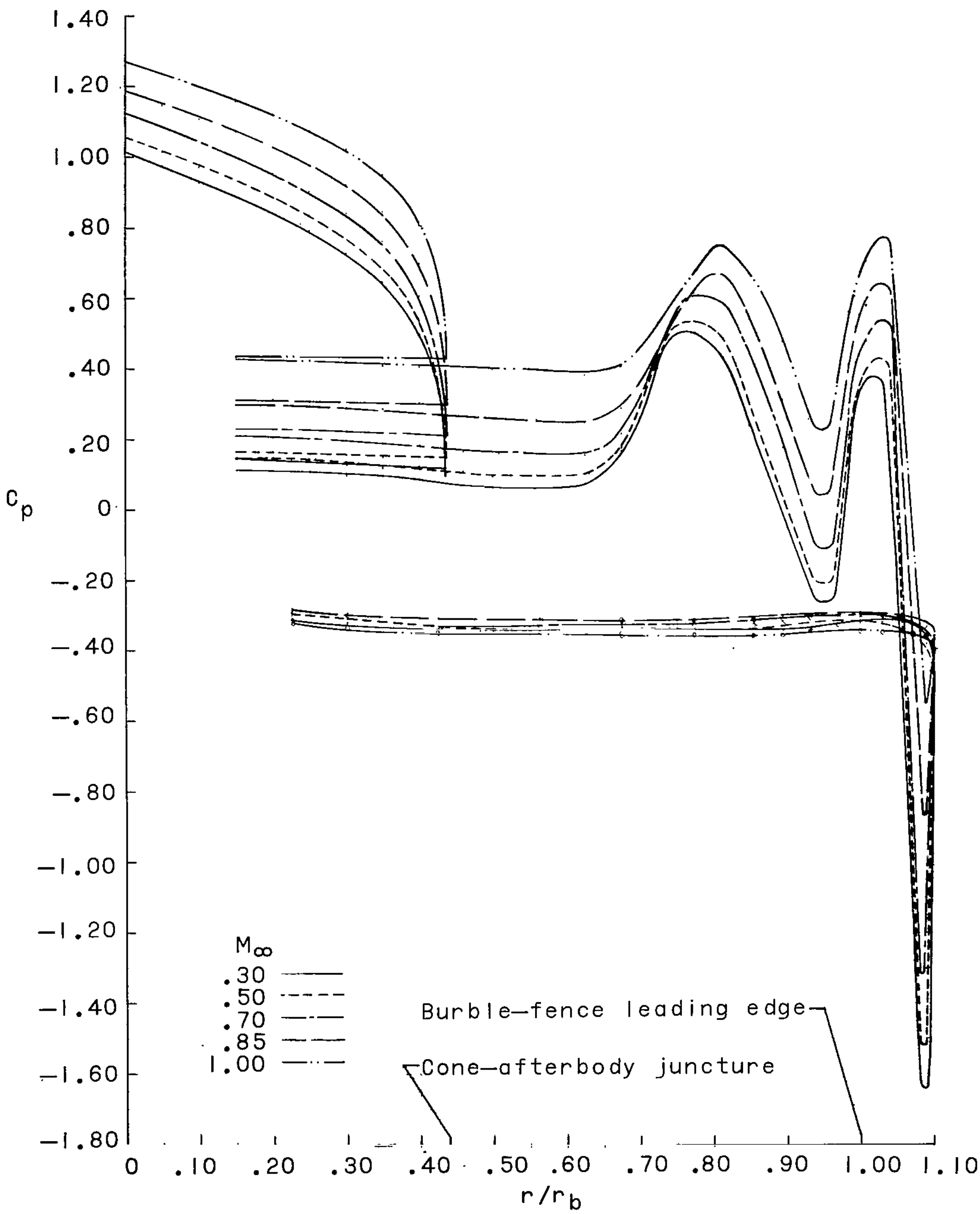
(a) $\frac{\delta}{d_c} = 0.11.$

Figure 8.- Typical experimental pressures for various cone-afterbody separation distances and free-stream Mach numbers.



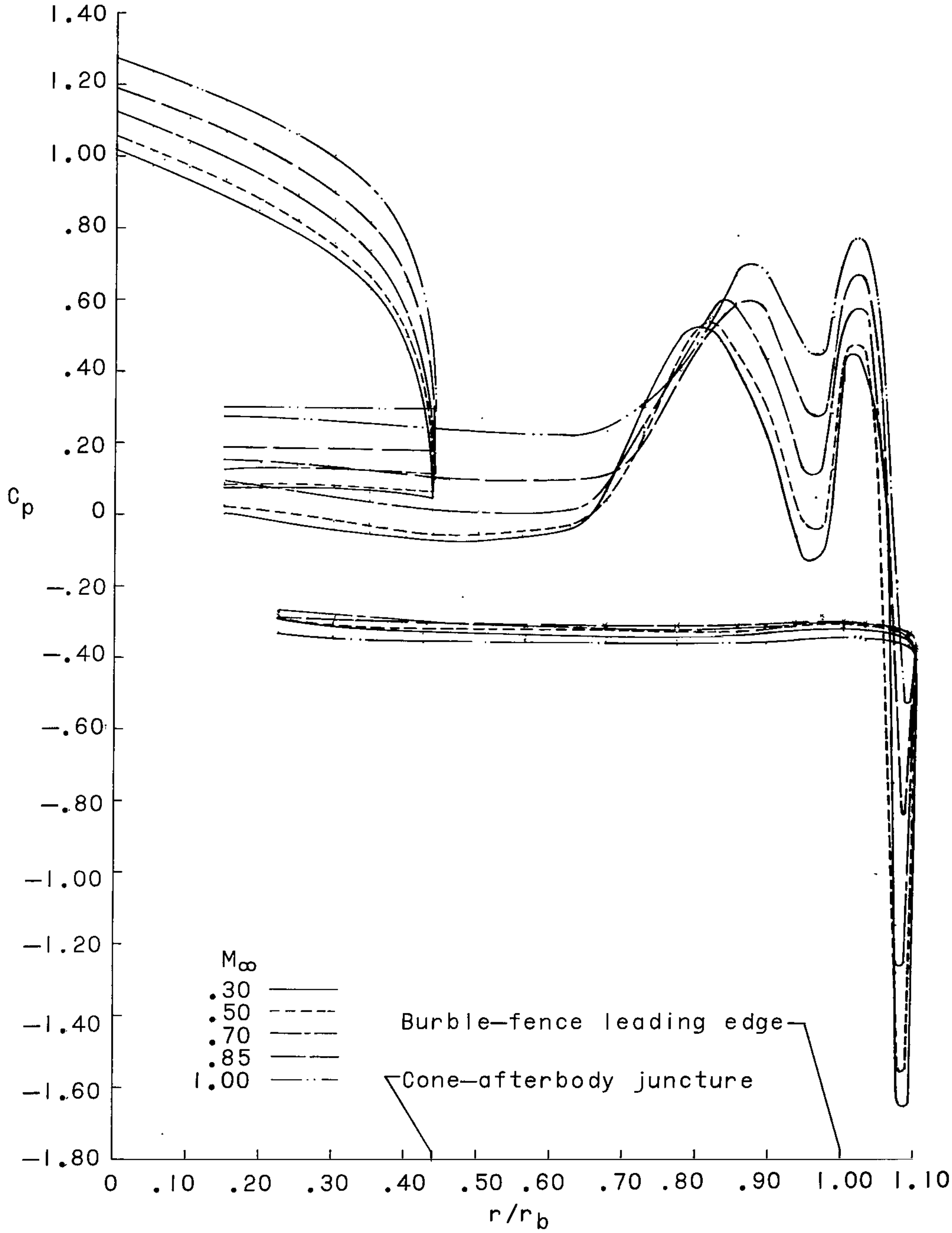
(b) $\frac{\delta}{d_c} = 0.34.$

Figure 8.- Continued.



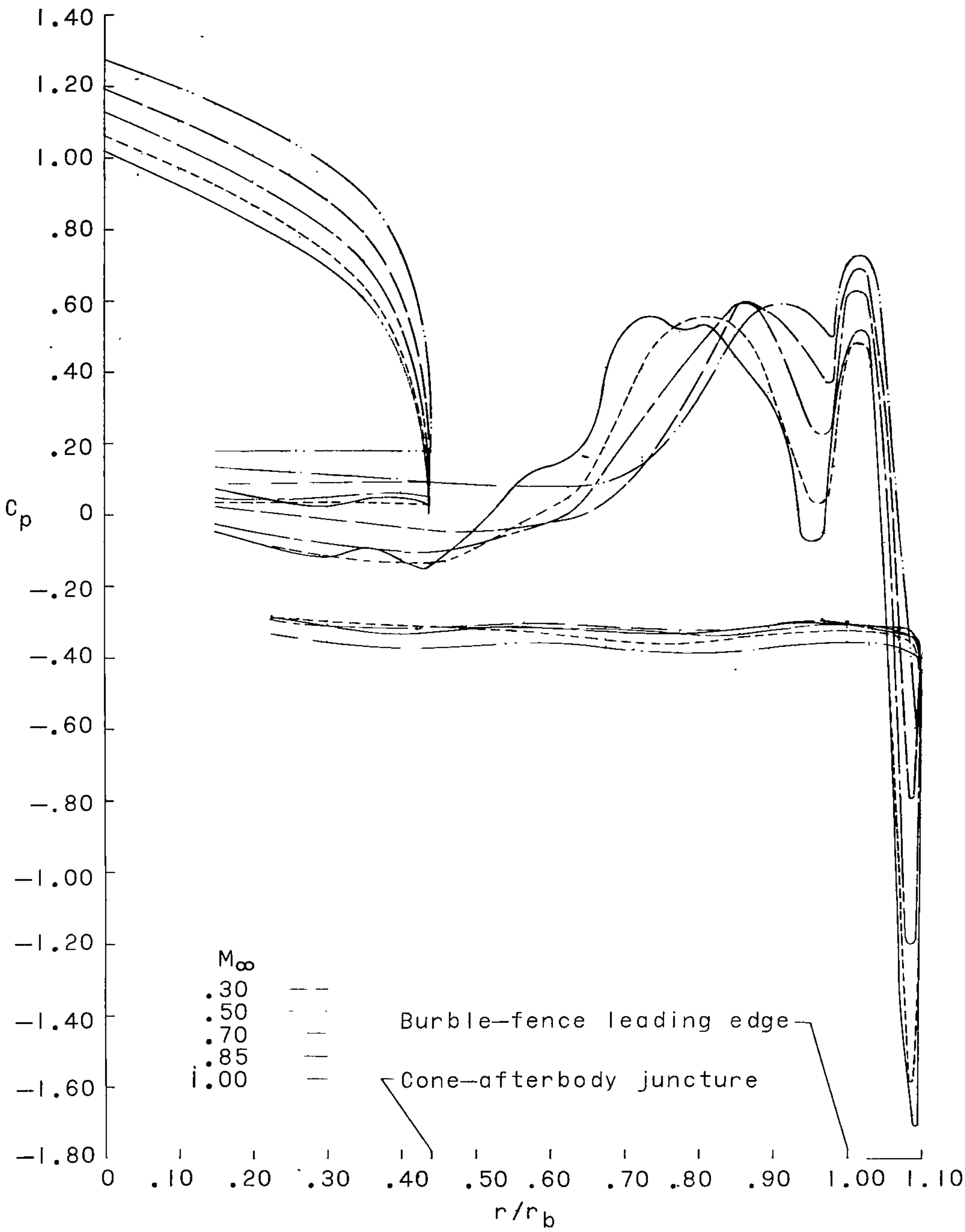
(c) $\frac{\delta}{d_c} = 0.57.$

Figure 8.- Continued.



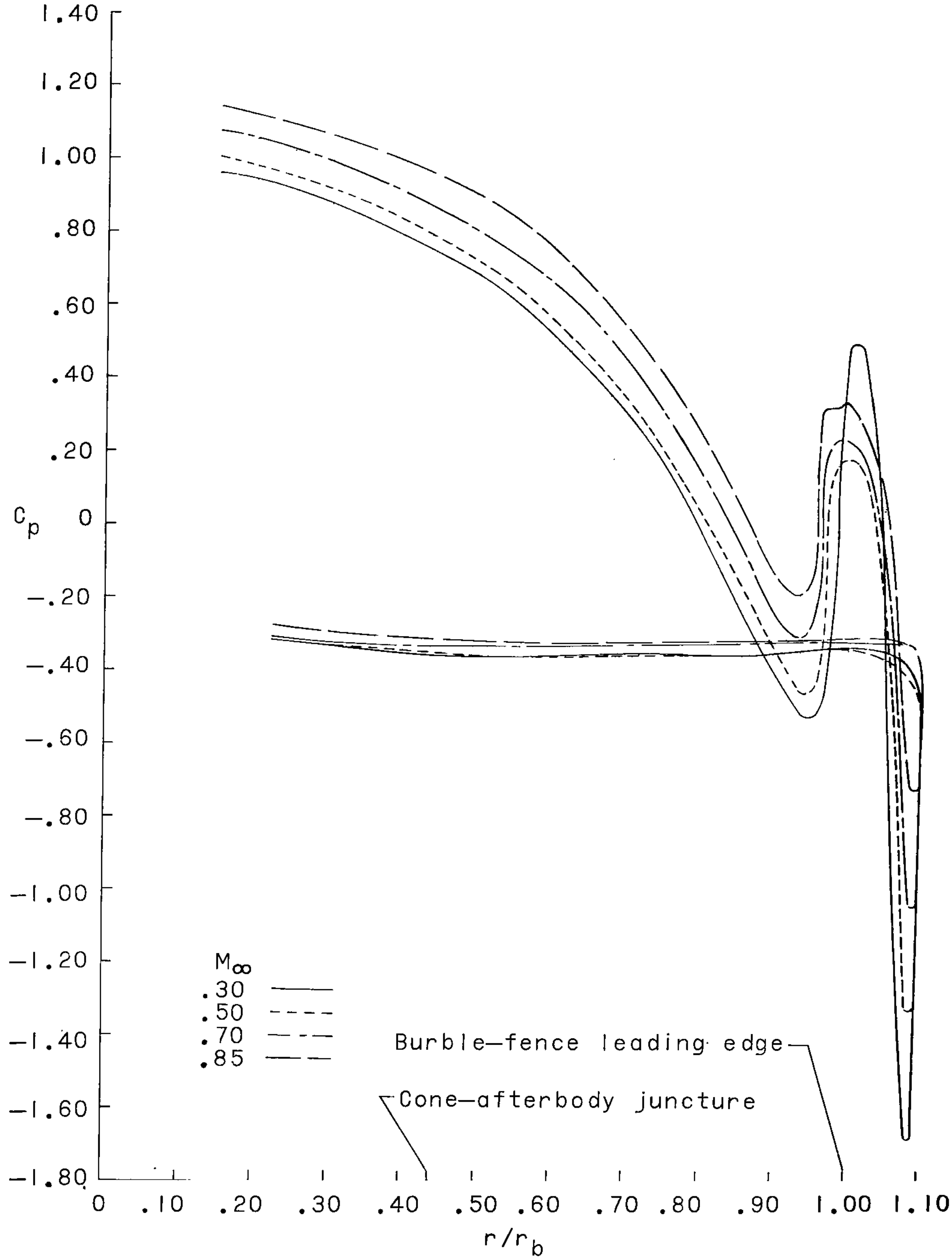
(d) $\frac{\delta}{d_c} = 0.91.$

Figure 8.- Continued.



(e) $\frac{\delta}{d_c} = 1.36.$

Figure 8.- Continued.



(f) Cone removed.

Figure 8.- Concluded.

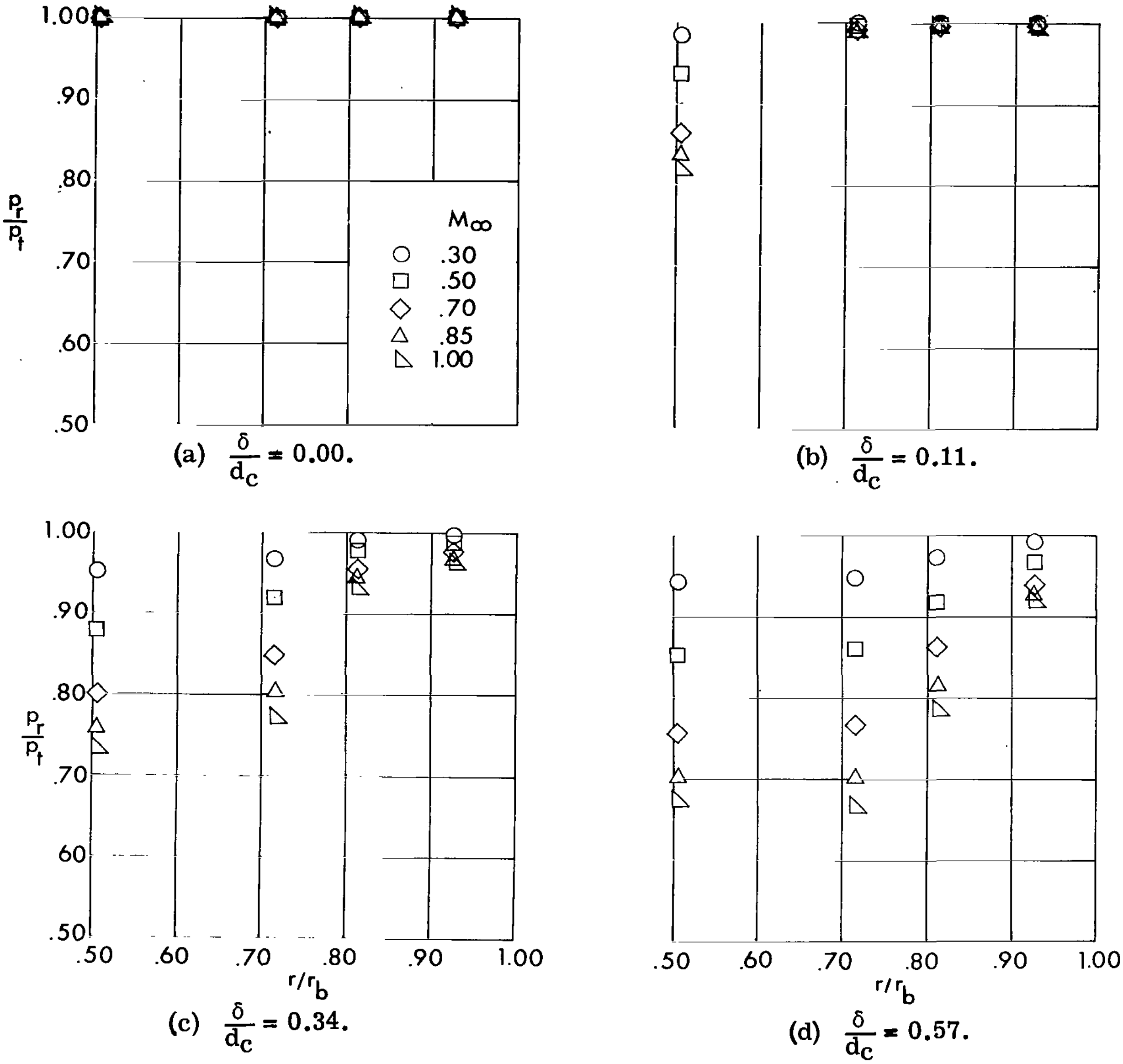
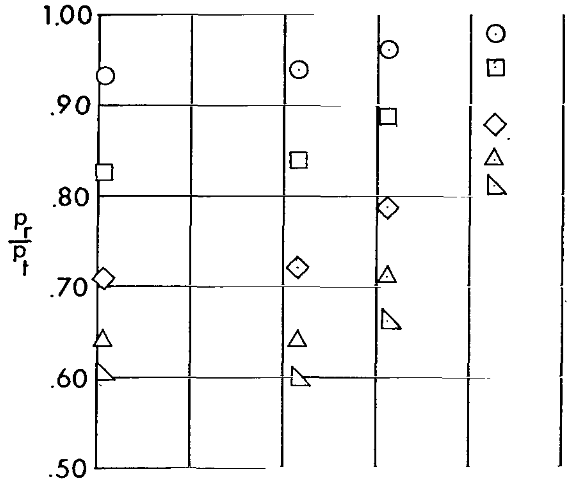
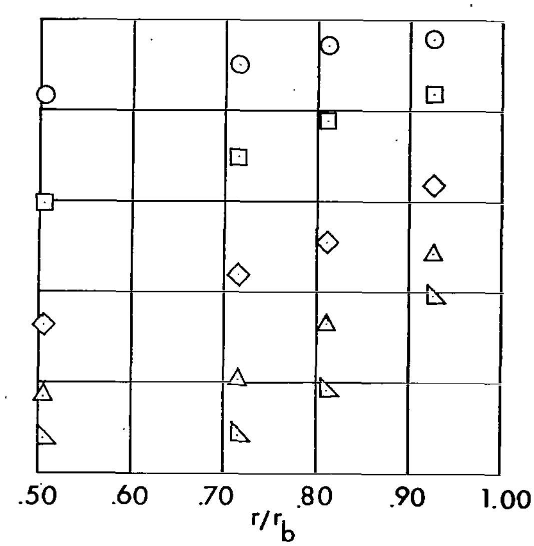


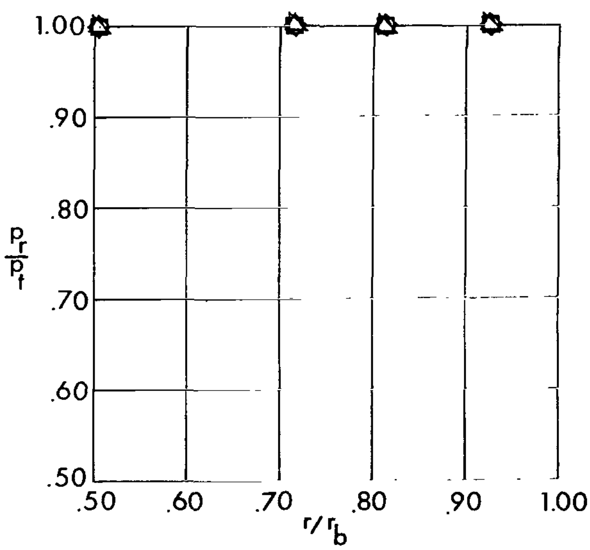
Figure 9.- Experimental ram pressures for various cone-afterbody separation distances and free-stream Mach numbers.



(e) $\frac{\delta}{d_c} = 0.91.$



(f) $\frac{\delta}{d_c} = 1.36.$



(g) Cone removed.

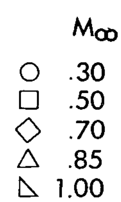


Figure 9.- Concluded.

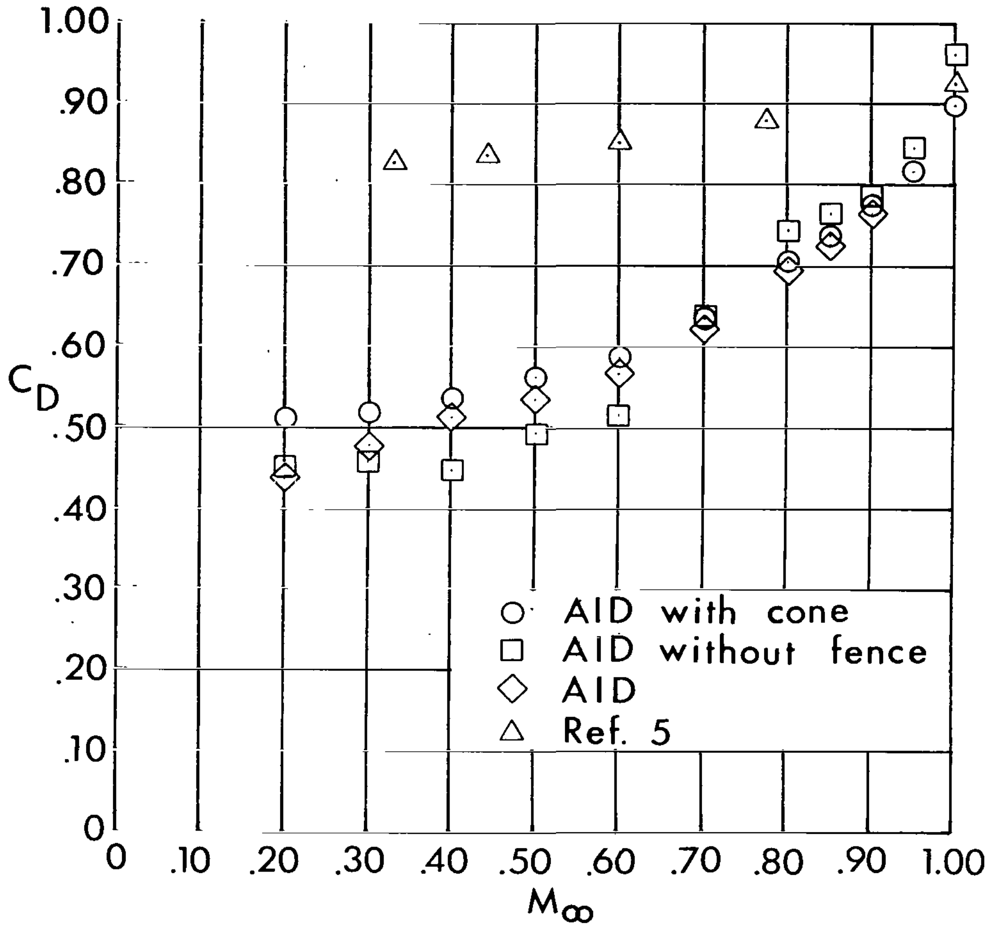


Figure 10.- Variations of drag coefficients with free-stream Mach number.

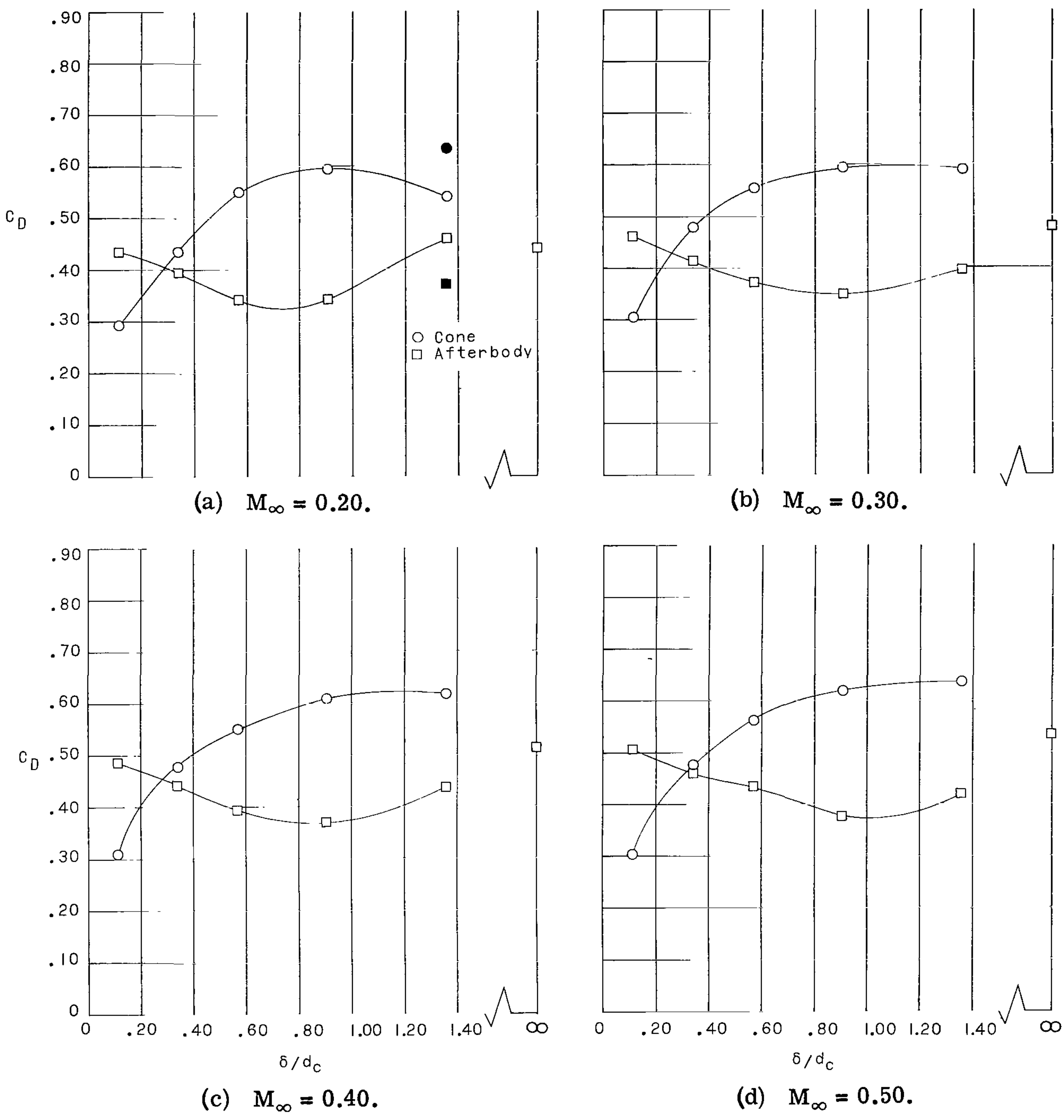
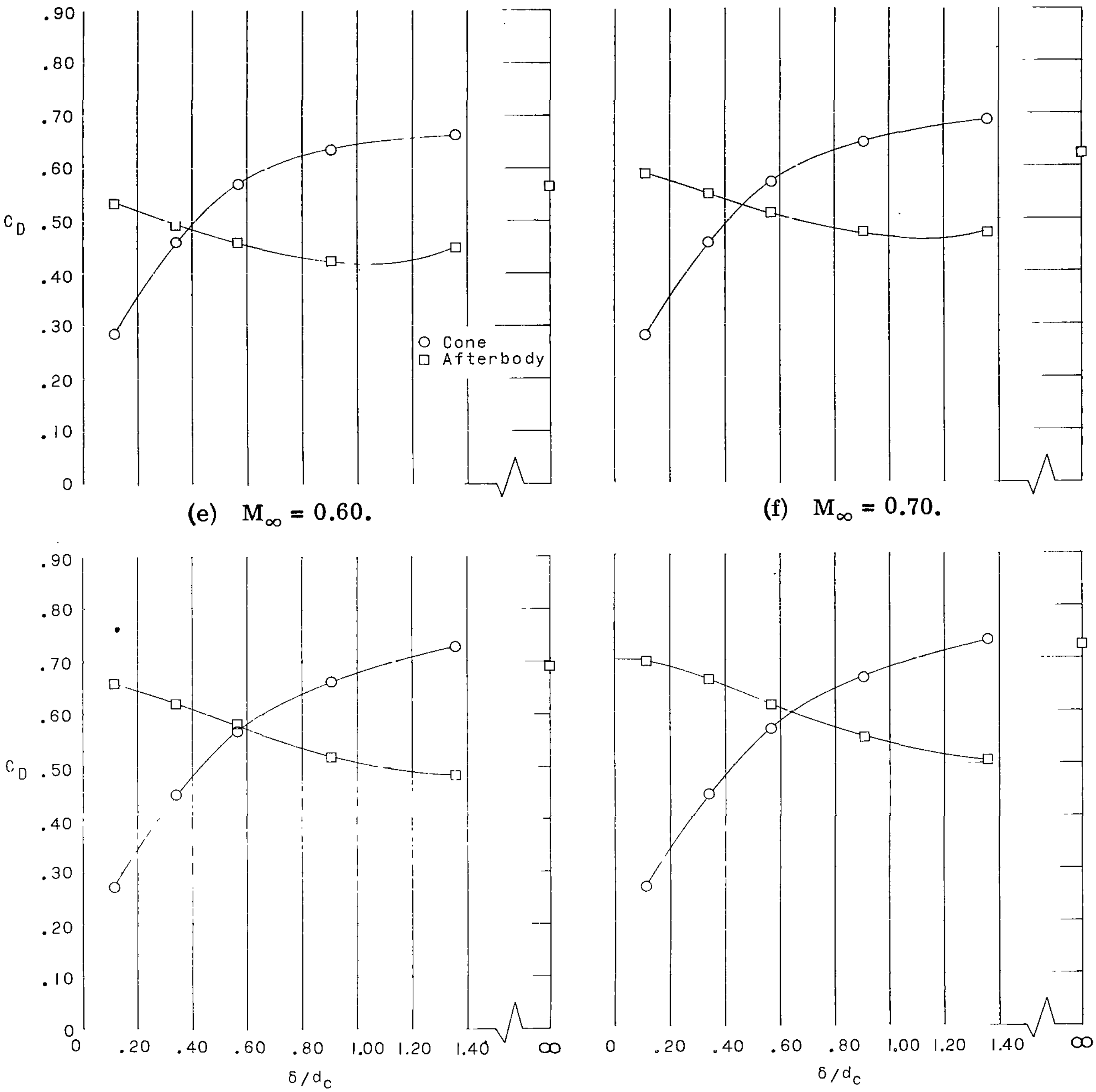


Figure 11.- Variation of cone and afterbody drag coefficients with cone-afterbody separation distance. Solid symbols represent data taken after test Mach number was approached from a higher value.



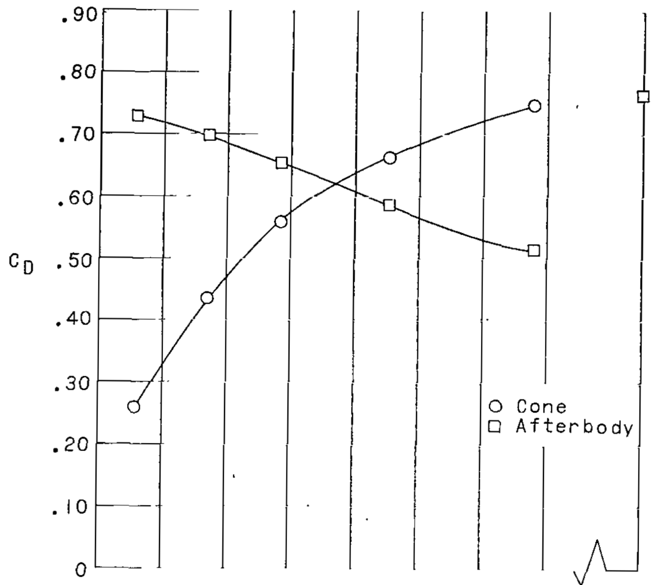
(e) $M_\infty = 0.60.$

(f) $M_\infty = 0.70.$

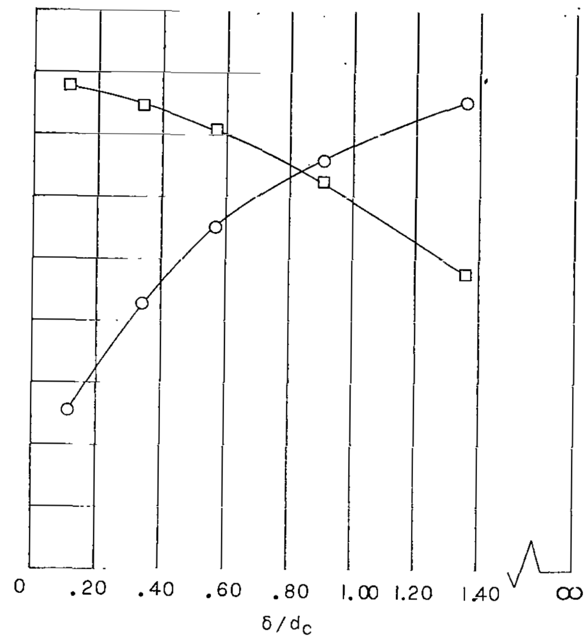
(g) $M_\infty = 0.80.$

(h) $M_\infty = 0.85.$

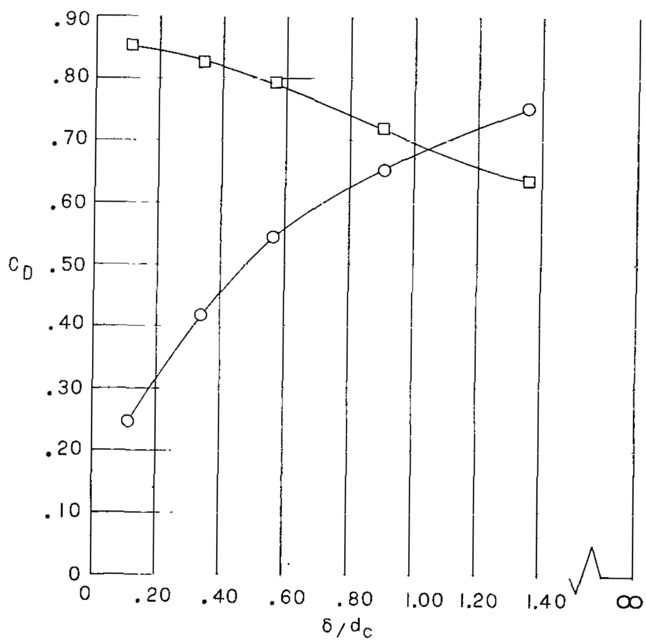
Figure 11.- Continued.



(i) $M_\infty = 0.90$.



(j) $M_\infty = 0.95$.



(k) $M_\infty = 1.00$.

Figure 11.- Concluded.

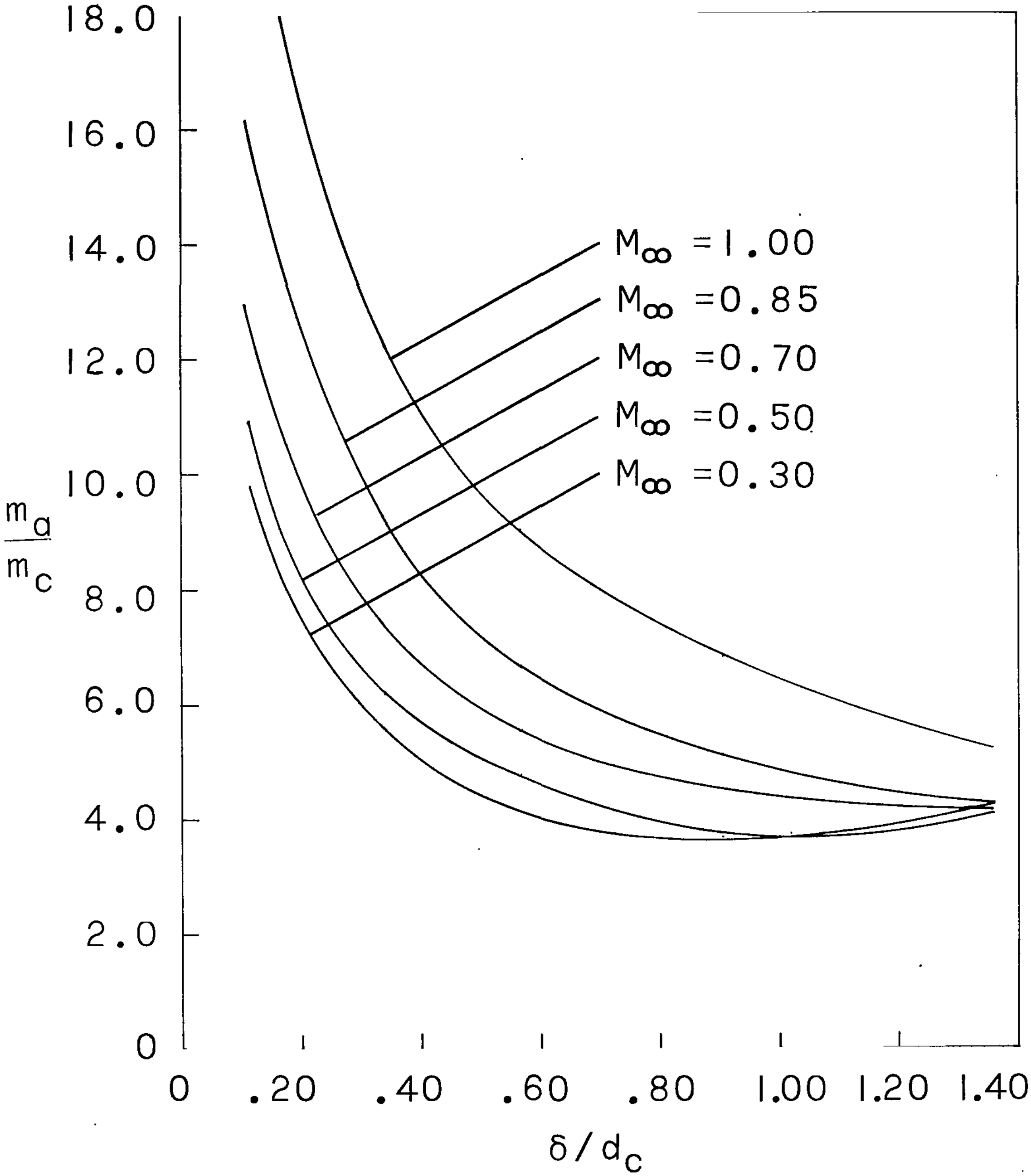


Figure 12.- Variation of afterbody-to-cone mass ratio with cone-afterbody separation distance. Afterbody-to-cone area ratio was 6.2.

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—NATIONAL AERONAUTICS AND SPACE ACT OF 1958

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